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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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Buffalo.

Chicago.

Buffalo.

Cleveland.

Cleveland.

Buffalo.

Cleveland.

If a page of a catalogue were dedicated to this innovation in tabulated form, manufacturers might quote a pro forma invoice of goods—say from New York to Hamburg, Bremen, Havre, Cherbourg, Bordeaux, London, Liverpool, Glasgow, Marseilles, Genoa, or Naples.

HAROLD S. VAN BUREN, Consul.

Nice, May 29, 1900.

SEPTEMBER ASTRONOMICAL NOTES.

Astronomical data for September, 1900, furnished to the MARINE RECORD by the Washburn Observatory:

The two most brilliant of the planets are conspicuous objects during the present month. Venus, the brightest of all, is the morning star and rides high in the east in the early morning hours. On September 16th the planet reaches its greatest western elongation from the sun, after which it will advance toward the sun again. The next brightest planet, Jupiter, shines from a low position in the southwestern sky in the early evening. Saturn, much less brilliant, is also low in the southern sky, and is near the meridian at sunset. The red planet Mars rises from the northeastern horizon soon after midnight and may be seen high in the eastern sky in the early morning hours before sunrise. Mercury is an inconspicuous morning star, but on September 13th passes through superior conjunction to become an evening star.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
Sept. 1.....	5:15.....	6:27
Sept. 11.....	5:26.....	6:10
Sept. 21.....	5:37.....	5:52
Sept. 30.....	5:47.....	5:35

The times of the moon's phases are:

First quarter.....	Sept. 2, 1:56 a. m.
Full moon.....	Sept. 8, 11:06 p. m.
Third quarter.....	Sept. 15, 2:57 p. m.
New Moon.....	Sept. 23, 1:57 p. m.

The principal fixed stars during the month are: In the evening hours, to the west, Arcturus, Vega; near the meridian, Altair; to the east, the bright stars of the Square of Pegasus and the constellations Cassiopeia and Andromeda.

LAKE SUPERIOR LEVEL.

The mean level of Lake Superior in August, by the U. S. gauge at Marquette, Mich., was 1.19 feet above low water datum. This is 0.36 higher than for the preceding month, and is 0.28 more than the normal rise which is 0.08 from July to August, according to J. H. Darling, U. S. Assistant Engineer at Duluth.

The stage for last month was 0.46 feet lower than in Aug. 1897, a year ago, but is 0.36 ft. higher than the average Aug. stage for the 26 years from 1872 to 1897, and is a good stage for navigation.

From United States forecast officer Richardson's observations of the Weather Bureau, it appears that the rainfall for the month was 6.15 inches, which is 2.81 in excess of the normal for August. The total rainfall since January 1 is 7.10 inches behind the normal, but this deficiency is being quite rapidly wiped out by the recent heavy rains.

CONSUL HUGHES sends the following from Coburg, May 17, 1900: Mr. A. Reis, of Antwerp, has patented the following method for preventing incrustation in boilers: A mixture of sugar, tannin extract, silicate of potash or soda, and boric acid is added to the boiler water to keep the salts in solution; when the water attains a density of about 15 to 25 Be, the boiler is "blown off." The working periods range from a fortnight to three months, accordingly to the quantity of water in use. Glycerine and alkaline sulphates are sometimes used in the mixture.

CLASS.	Genoa.	Marseilles.
A.....		
B.....		

There should be, at the head of the printed table, a summary description of the goods entering into each class. Thus persons receiving catalogues could at a glance and with much saving of time make up the cost of goods c. i. f. and gain an idea as to the possibility of business.

Rates of insurance do not vary greatly, and catalogues might also contain the rates to the different ports.

Foreigners who look over American catalogues invariably say, "And what is the freight?" To ascertain this requires special correspondence and loss of time, all of which might be saved by the plan suggested above.

In fact, I do not see why catalogues should not contain a pro forma invoice of goods, i. e.:

24 steel ranges.....	\$480.00
Freight to.....	50.00
Insurance.....	3.50
Cartage and other charges.....	5.00

Costs, insurance and freight at..... \$538.50

THE TELEPHONOGRAPH.

The "telephonograph," a new invention in which the German Postmaster-General, Von Podbielski, is much interested, is a combination of a telephone and a phonograph for the purpose of recording messages received during the absence of the operator. This apparatus was invented by a Dane by the name of Paulsen. The person called up has only to hold the trumpet to his ear upon returning to the office, even after an absence of days, to receive the message. Many inventors have tried to effect such a combination, but all failed on account of the difficulty of transferring the message to a wax cylinder.

Instead of a wax cylinder, Paulsen used a flexible steel band in his phonograph, which is much simpler in construction than the Edison phonograph. Messages are much more easily removed from the steel band than from the wax cylinder. It is wound on two spools, moving quickly from one to the other, and coming in contact with a very small electro-magnet, switched into the circuit, which affects the steel band in such a way as to record on it any sounds that may penetrate to the phonograph. It is only necessary to cause the steel band to repass the magnet in order to have the sounds repeated. Each vibration of the electro-magnet produces a corresponding vibration of the steel band. In order to remove a message from the steel band, a magnet is passed over the surface on which the message was recorded.

The tests recently made in the engineering department of the Copenhagen Telephone Company, whose service the inventor has recently entered, were surprisingly successful. Up to the present time, the apparatus records a song better than a spoken message; but the latter is nevertheless quite clear and the experts who have been making experiments in co-operation with the inventor declare that it is only a question of time until the telephonograph will repeat a message as clearly as it can be heard through the most improved telephone.

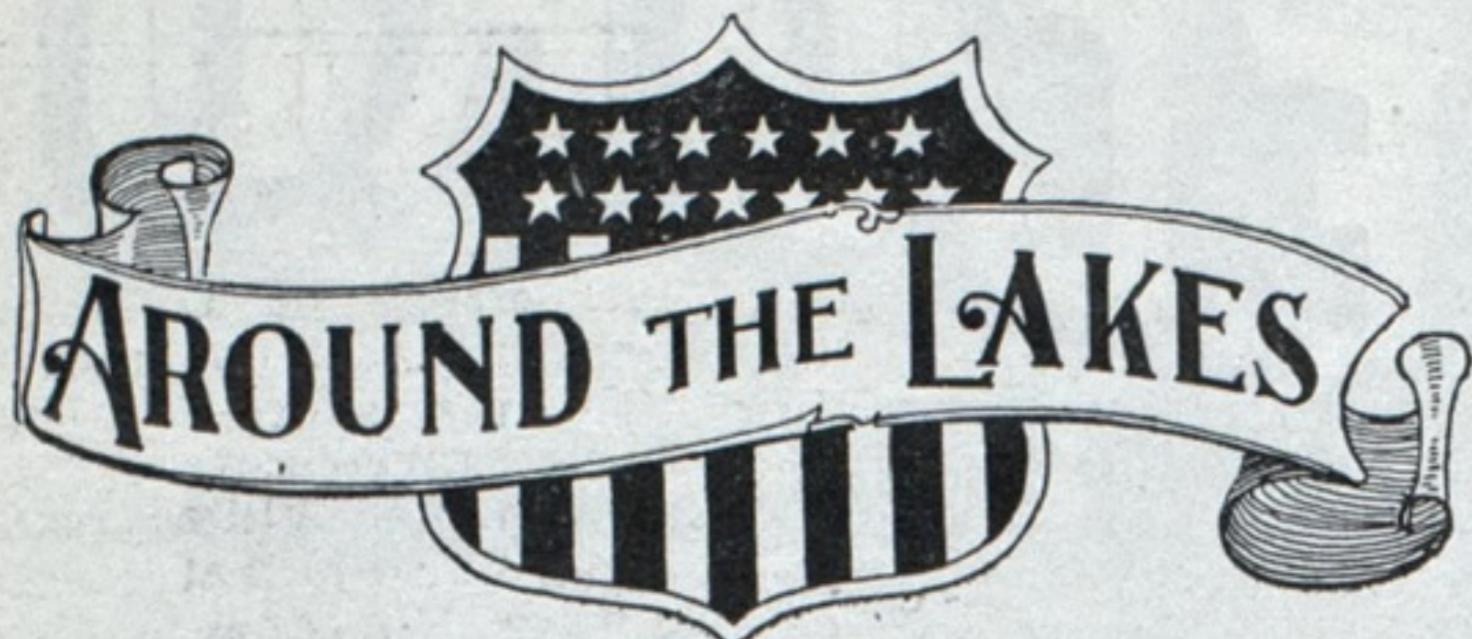
BRAINARD H. WARNER, Jr., Consul.

Leipzig, May 22, 1900.

GROWTH OF THE LAKE CITIES.

One of the important and interesting matters developed by the census is the remarkable growth of the lake cities. Their rate of increase surpasses that of the seaboard cities or the river cities. Milwaukee's increase is 39.54 per cent., Cleveland's 46.07, Chicago's 54.44, and Toledo's 61.88. The rate of increase of Buffalo is greater than that of New York. This betokens a great development of the manufactures and commerce of these cities, and brings into prominence the enormous importance of the inland seas to the prosperity of the nation more clearly than ever before. In fact, while students of political conditions have always recognized the great future that was to come to the portion of the country having the lakes for its means of cheap transportation, the people at large have regarded these bodies of fresh water rather as phenomena of physical geography than as fulfilling in any marked degree the commercial office of the ocean. Such statistics as are now given will open the eyes of the thoughtless and enable them to understand what a service the Great Lakes are rendering in the prosperity of the nation to which the vast mineral resources of their adjacent country are tributary.—Boston Herald.

MR. H. F. J. PORTER, of the Bethlehem Steel Co., South Bethlehem, Pa., has been invited to deliver an address on "Evolution of the Engine Shaft" at the convention of the National Railway Master Blacksmiths' Association at the Cadillac Hotel, Detroit, on the evening of September 19; any one interested in the matter will be welcome at this meeting.



CHICAGO.

Special Correspondence to The Marine Record.

Capt. Thomas L. McGinn, of Milwaukee, has succeeded Capt. Thayer as master of the Goodrich tug Arctic.

After Tuesday's heavy business in the grain trade chartering was much lighter, but rates were firm at $1\frac{1}{8}$ cents for corn and $1\frac{1}{2}$ cents for wheat to Lake Erie.

The season of the steamer Manitou has been extended to September 18, when the last sailing will be made from Chicago. South-bound the last trip will be September 19.

The keel of the new steamer ordered by Capt. C. W. Elphicke and associates is being laid at South Chicago and work will be pushed from this time on. Keels for the Atlantic boats will follow in short order.

When corn has been moving freely, there have been days with bigger business, but not for many years has so much wheat been placed for shipment. Nearly all of it has been brought from Kansas City and the southwest to Chicago for the lake route by the elevator companies.

Marine underwriters are becoming not a little uneasy over the frequency of collisions. At this time last season there was practically nothing on this class to pay for, and, indeed, the whole season was very exempt from collision accidents, which had very much to do with the good margin of profit that was made on lake hulls. There is still a fair percentage of profits ahead this season.

The steamer Gratwick was at the Santa Fe elevator for grain Sunday, and the harbormasters and the bridge tenders kept a bright lookout. One of the bridge tenders said: "If she knocks down my bridge coming down the branch the city won't rebuild it, and she thus knocks me out of a berth. I'll look out for her. The two Orrs, the Kearsarge and the Rockefeller have done enough. I'll watch out for the Gratwick!"

In regard to attachments on vessels for damages done to bridges in the Chicago river, vessel owners object most strenuously to having their property attached before any claim for damages has been presented. They further object to attachments served after the close of the court for the day, for the seeming purpose of keeping their vessels in port until the next day. They do not object to attachment where payment of proper claims has been refused.

The Christopher Columbus is credited with having carried over 18,000 people to Milwaukee in six days. The government inspectors have been keeping close watch on the boats leaving port this season to prevent overcrowding. However, the lines have been very careful to keep within the limit. The Goodrich line, which operates the whaleback passenger steamer Christopher Columbus, always makes a point of keeping a couple of hundred below the government limit.

Some vesselmen have contended that the city has no right to tie up the boats that have been butting into the bridges without taking action through the federal authorities. This will be decided by the United States court of appeals in the Onoko-Ayer collision case in a short time. It is admitted that the Illinois water craft act will hold so far as boats owned in the state are concerned, but whether this will apply to craft owned in other states is questioned by authorities in admiralty law.

Major J. H. Willard, the government engineer, ridicules the claim made by the traction companies that the depth of the Chicago river has been lowered three feet owing to the opening of the drainage canal. To demonstrate that the assertion of the Union Traction Co. made in its reply to the mandamus of the city to force it to lower the tunnels, is untrue, Major Willard will take soundings of the river. Although it may be true that the river level is lowered slightly, it has not dropped three feet, claims Major Willard.

In the construction of the 17 ships now under contract by the American Ship Building Co., 7,000 men will be employed from Sept. 1 to the opening of navigation next spring in the six shipyards of the company. The boats will cost about \$3,700,000, and in their building about 45,000 tons of steel, exclusive of engines and boilers, will be required. The 17 ships will carry in a single trip about 90,000 tons, a much lower average than in the new tonnage of last season. The current price of steel plates is \$25 per ton, as compared with \$70 at the top of the boom. This is but \$3 or \$4 more than the bottom prices three years ago.

"For a port that has lost its water commerce," said a vesselman, "Chicago seems to be doing quite well." On Tuesday Mr. Armour's representative started out to charter tonnage. Owing to the recent flurry over attachment on

ships for damages to river bridges owners had held back to some degree from sending their vessels to Chicago preferring Lake Superior. The shortage in tonnage caused an advance in rates from $1\frac{1}{4}$ to $1\frac{1}{2}$ cents and at that figure, everything to be had was taken. When all the available boats were chartered, over a million bushels of Armour grain had been placed. Then the other shippers woke up and started out, but most of them will wait until the next fleet arrives. A South Chicago firm secured the Rockefeller steamer Ericsson for 150,000 bushels of wheat and 50,000 bushels of corn.

An official trial was given the steamer Darius Cole this week and the best speed the steamer could make was $14\frac{3}{4}$ miles an hour. Four engineers were aboard to represent the Williams line and the Star Cole Co., from whom the boat was purchased last fall for the South Haven run, and it is understood that they received a guarantee of \$50,000 that the steamer would make 15 miles an hour. This she has failed to do. Instead of making the run across the lake in five hours as scheduled, her best time has been between seven and eight hours, and the trip has been considerably prolonged at times by unfavorable winds. The Cole was taken to Milwaukee a few days ago to go into dry dock for a thorough cleaning of the hull preparatory to the speed trial. The officials of the Williams line will give out no definite information as to the course they will take, but it is understood that the result of the trial will furnish grounds for a suit for the recovery of the guarantee.

The steamer Denver, which ran down the Specular in Pelee Passage, Lake Erie, is at Milwaukee, and Proctor in Admiralty Shaw, of Detroit, has been engaged in taking testimony of her officers and crew, with reference to the collision. Mr. Shaw represents the hull insurance on both vessels, which is carried by the Peck-Prime-McCurdy syndicate, of Chicago. The Denver, which carries an A1 rating, is insured for \$50,000 on a valuation of \$65,000, while the Specular, with an A1 $\frac{1}{2}$ rating, is insured for \$35,000 on a valuation of \$60,000. Harvey D. Goulder, Esq., of Cleveland, represents the uninsured interest of the Republic Iron Co. in the Specular, as well as the insurance on her ore cargo, and the freight money it called for. In the litigation which is sure to grow out of the collision, the uninsured hull interests, the value of the lost ore cargo, and the freight money constitute the only complications that can arise. As far as the Denver is concerned, there promises to be no uninsured interests, as it is thought that an appraisal of her value, which is usually made in cases of litigation, will not go over the amount for which she is insured, \$50,000. Depreciation in the existing business conditions will have a strong bearing in the matter of valuation. The uninsured interest in the Specular, the value of her ore cargo and the freight money represent together about \$39,000.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

The steamer Selwyn Eddy took on 143,000 bushels of wheat at Duluth last Friday, in one hour and fifty minutes. She loaded at the Peary elevator.

The freight rate on wheat from here is 2 cents, but there is not much demand for tonnage. Several vessels that were chartered some time ago to load in September at 2 cents are now loading.

It is expected that a contract will be awarded by A. Booth & Co., soon, for the new steamer which they will build to take the place of the Dixon. The bids are now in the hands of the company for consideration.

Capt. B. B. Inman has obtained the contract for picking up beached logs on the north and south shores of Lake Superior. The Duluth Log Salvage Co. recently advertised for bids for this work, and he was the successful bidder.

Capt. M. F. Chalk, United States inspector of boilers at this point, celebrated his 52nd birthday on Saturday. Mike, as he is familiarly termed, is justly popular in Duluth, and with all that know him, and many of his friends took the opportunity to wish him good luck.

The city of Duluth has under consideration the erection of an aerial ferry between the city and Park Point according to the plans of M. Arnodin, a French engineer. The preliminary plans contemplate a structure of 330 feet span and 150 feet high, carrying cables and trolley arrangements by which cars, suspended so as to move nearly at the level of the water, will be carried across. Four bridges or ferrys of this type are in operation in Europe.

Proceedings in admiralty to libel the steamer Britannic, belonging to the Northern Navigation Co., of Toronto, for \$20,000, have been commenced in the United States court by Mrs. Elizabeth S. Van Anda, of Parry Sound, Ont. In her complaint Mrs. Van Anda charges the master of the Britannic with not properly caring for her husband, Rev. Carmi A. Van Anda, while the latter was a passenger on the vessel, and as the result of such carelessness he caught cold and died.

The movement of lumber in this market is said by some of the shippers to be improving. There has been a decline in the prices from the March schedule, according to the shippers, of \$1.50 to \$2 a thousand and under the influence of lower prices a movement of the commodity has begun. Sales last week were in the neighborhood of 15,000,000 feet and the largest amount sold by any one firm was 7,000,000 feet in two lots. The prices of lumber are still well within

the line of reasonable margin of profit, according to the shippers, though they do not look for any marked reductions from present quotations.

Not only is the year showing a greater production of ore than ever, but the search for new mines and the development of old and abandoned mines has never been equaled in any year in the history of the trade. Many million tons of fine ore have been discovered on the Mesaba range alone, until there is now in sight on that range far more ore than any stretch of the imagination could have believed possible a few years ago. It is by no means probable that all has yet been found. At present, while the search for ore by individual speculators has discontinued and these factors are eliminated from the situation, the large companies are still at work heavily. The Carnegie interests are as active as ever in their explorations, and so are their rivals in the mining and manufacturing business. Many of these concerns have been able within a year to supply their wants of raw material for generations to come, and are firmly entrenched in ore reserves secured at low price.

Andrew Berringer, deck hand on the steamer Troy, of the Western Transit Line, was injured at Duluth early in the season. Berringer, with a companion, was handling a rope being used to snub the steamer up to the dock. In some manner his leg became entangled in a bight of the rope, and was severely bruised, though not broken. The injured man was taken to the Duluth Marine Hospital, where subsequently the surgeons decided that amputation was necessary. An effort at settlement was made by both insurance companies, and the Western Transit Co., and Berringer was tendered a good round sum to sign a release, not that the company believed itself at fault, the accident being but a natural occurrence in the line of the man's duties. Nothing further was heard of the case until the Troy, lying at her dock, was libeled in the sum of \$10,000. Bonds were furnished by the Western Transit Co., and the steamer released. The matter will probably be tried out in the courts.

The report reaches here from Marquette that Powell & Mitchell are now getting things in shape for a big production of ore at the Helen mine, where they have a big contract from the Lake Superior Mining Co. They are now shipping 1,000 tons of ore per day, but when their force is filled out to 700 men this production will be greatly exceeded. At present there are some 300 hands at the property, but many of this number are engaged on work other than mining. The development of the Helen mine stands forth as one of the most notable achievements in the history of the Lake Superior mineral industry. Last August the site of its wonderful deposit of ore was undisturbed by man's activity. Now it is the home of an army of laborers and miners, and the terminal of a twelve mile railroad leading to Lake Superior and the scene of an unrivaled building and business boom. As just stated, the Helen property is located twelve miles from the lake shore, a considerable distance along the coast line beyond Point Brute. There is an enormous deposit of ore at the Helen mine. Its extent has not yet been definitely determined, but it is certain that there are 10,000,000 tons of ore in sight, while some estimates have placed the quantity as high as 30,000,000 tons.

The Peavy elevator, now in course of construction on Rice's point, at Duluth, will be the largest in the world, the grain storage capacity figured on being 3,750,000 bushels. The structure will be 222x204 feet in size and 125 feet high. From the exterior it will appear to consist of a number of large cylindrical compartments separated from each other by short, straight walls. The building will contain thirty circular, or fundamental bins, and twenty square, or secondary bins. The former are ranged in rows of five each and are separated from each other by a distance of seven feet. They will measure 33 $\frac{1}{2}$ feet in diameter and rise to almost the height of the building, namely, 125 feet. The walls at the base will be twelve inches in thickness but will gradually diminish until at the top they will be six inches thick. They will be composed of solid concrete, in which will be embedded steel bands $\frac{3}{8}$ x1 $\frac{1}{2}$ inches. The bands will extend around the bins in a horizontal direction in order to lend strength and firmness to the wall and make them capable of resisting pressure of the grain from within. Connecting each circular bin with the one adjoining will be a wall similar in construction to the walls of the bins, except that the rods will be straight, and instead of being joined at the ends will be fastened to the walls of the bins. By means of the connecting wall the secondary, or square bin is formed. The sides are concave, being simply the exterior walls of the four adjoining circular bins. These bins will measure 40 feet in their widest parts, but owing to their concave sides they will not have as great capacity as the circular bins. The arrangement of the bins is such, however, that there is no waste space. The capacity of each of the circular bins will be about 78,000 bushels. The thirty bins of this kind, therefore, have an aggregate capacity of about 2,400,000 bushels. The twenty square bins have an aggregate capacity of 1,400,000 bushels, or about 69,000 bushels each. The total, according to these figures, gives the elevator a capacity of 3,800,000 bushels, though it is generally referred to as a 3,750,000 bushel elevator.

There will be no means of reaching the top of the building from the interior, but a passenger elevator will be established between two of the circular bins on one side of the great structure. The roof will be flat, and like the remainder of the building will be of concrete and steel construction. There will be no openings in the solid walls except at the bottom, where five tunnels, or archways, will run toward the interior. The building will rest upon a foundation of piling and concrete.

BUFFALO.

Special Correspondence to the Marine Record.

The several hundred longshoremen on strike at Erie, for the past eight weeks, have returned to work, and cargoes are now being handled with the usual former dispatch.

Since the Canadian steamer Tilley was burned off Fairport last season she has been rebuilt and rechristened the Advance. She took her first cargo at this port for Jackfish.

Capt. M. S. Peterson, of the steamer Northern Wave, says that between the ill lighted Pelee Point and the unlighted wreck of the sunken steamer Specular vessels risk much in attempting to get through the Pointe Pelee channel, Lake Erie, at night.

Marine underwriters are becoming not a little uneasy over the frequency of collisions. At this time last season there was practically nothing on this class to pay for, and, indeed, the whole season was very exempt from collision accidents, which had very much to do with the good margin of profit that was made on lake hulls. There is still a fair percentage of profit ahead this season.

M. C. Ebel, of Brooklyn, N. Y., one of the promoters of the International Navigation Co., the new steamship line recently organized at this port, was in Detroit this week for the purpose of securing, by either charter or purchase, a passenger steamer for the route which the company proposes to open up next season between Buffalo and Niagara Falls. Mr. Ebel did not succeed in getting anything suitable, nor is he likely to on account of there being a great lack of this class of tonnage on the lakes.

Hereafter vessels entering or departing from Buffalo's inner harbor at more than six miles an hour will have to pay \$1,000 for the privilege, and the captains of such craft may be imprisoned. Not long ago Maj. Thos. W. Symons, United States Corps of Engineers, nearly lost his life in a collision near the entrance of Buffalo river. Recently he prepared regulations limiting the speed of vessels passing in and out of the river to six miles an hour. These regulations have been approved by the Secretary of War and take effect at once.

Olcott Beach Park, the beautiful resort which the International Traction Co. has fitted up at an outlay of \$150,000, is formally opened to the public. At Olcott General Manager Burt Van Horn is working like a beaver to provide satisfactory service, and at Lockport, R. E. Danforth, superintendent of the Buffalo Railway, is endeavoring to find transportation for every person who desires to visit the beach. J. H. Murray, superintendent of the Buffalo & Lockport line, has all he can do to look after the increased business of the line.

The work of deepening and widening the harbor entrance is in progress under Maj. Symons, Corps of Engineers, U. S. A. Two dredges have been hired from Hingston & Woods, and the shoals just north of the inner light and from there out to the outer breakwater, on which so many vessels have gone aground each year in the past, are being deepened to 23 feet, except where rock prevents a deepening to more than 21 feet. "We are going to take out rock and everything eventually," said Maj. Symons, "but this fall we will have a clear 21 feet over all the harbor entrance, so as to prevent any such accidents as have been frequent in the past." The foundation of the new north breakwater is practically finished, and the work of putting in the solid concrete superstructure will be begun in a few days. The new buildings and shed for the light-house depot are about finished, and the light house stores of this district will be removed to them soon.

Work on the largest cantilever bridge in the world has been started by the Phoenix Bridge Building Co., of Philadelphia. The contract was awarded by the Canadian Government after a long study of the plans of the various bridge building companies, and by its preference for the Phoenix Co., Philadelphia is placed in the lead in bridge building. The bridge, for which the structural material is now being made at Phoenixville, will span the St. Lawrence river at Quebec. According to the terms of the contract, it must be completed within two years. The approximate cost will be \$4,500,000. Including the approaches the bridge will be nearly 3,000 feet long. The main span which will cover the deepest part of the St. Lawrence river, will be 1800 feet long. About 10,000 tons of steel will be used in erecting the main span. When the size of the structure was definitely decided upon it was found necessary to build it 180 feet above tide water in order that the heavy flow of ice in winter could pass without becoming jammed. The bridge will be 70 feet wide, and through its center four railway tracks will be laid. On either side will be two footwalks, with a driveway between. Just underneath the center of the bridge the St. Lawrence river is about 200 feet deep, so the caissons for the piers will have to be set many feet below tide water.

Frank J. Firth, of Philadelphia, chairman of the Committee of the Lake Carriers' Association, appointed to look after the interests of Association members, as affected by the Chicago drainage canal, is expected to arrive here on Thursday. On his arrival a meeting of the committee will be held to further consider the subject of dangerous navigation in Chicago river. Nothing has yet been heard from the Secretary of War in reference to the protest and petition presented by the committee to that department in May. In the case of the steamer Syracuse, of the Western Transit Line, which was libeled for alleged damage to the 22d Street bridge, a careful survey of the bridge has been made,

and it has been found that the structure had previously been hit by some other vessel, in the exact spot where the Syracuse is said to have struck. An old break is plainly distinguishable. Under the circumstances, with fair treatment on the part of the Chicago authorities, this fact should relieve the Western Transit steamer from liability for the whole damage. As regards the further libeling of vessels for damage inflicted upon Chicago river bridges, the corporation counsel of that city has gone on record as saying he will discontinue the practice of libel, so far as regular line boats are concerned. He requests that the Lake Carriers' Association furnish him with a list of names of line steamers, and hereafter, in case of damage, he will serve notice upon different agents representing the boats against which damage is assessed, instead of tying up the boats, as in the case of the Fitzgerald and Syracuse, which he now admits he would not have done, had he been fully posted in the matter. Prompt resentment by the vesselmen of the methods begun by the Chicago officials, appears to have borne good fruit, and it is expected that at the meeting on Thursday further plans for the relief of navigation in the Chicago river will be devised.

KINGSTON, ONT.

Special Correspondence to The Marine Record.

The labor unions of the city held a parade and picnic on Labor Day. In the former there were 3,000 workmen. At the latter there were 8,000 present.

The Collins Bay Rafting Co. is now obliged to place the steamer Scottish Chief in the dry dock at Quebec, as Lloyd's agent is not satisfied with the amount of repairs made to the vessel at St. John's.

The schooner Grantham has lately been repaired thoroughly and will be used in connection with the work of raising the steamer Oconto, sunk some time since, near the Thousand Island Park.

It was in the darkness the schooner Dunn went on the Myles shoal, and not in daylight as reported. This is the first time in 17 years that Capt. Dix's boat has grazed the bottom. He has been a very successful mariner.

The Montreal Transportation Co. will build another large lake barge and also a river tug. The work will be commenced at once, and will give employment to a large number of men. The specifications are now about completed.

The diamond drill on the Matawan Range, owned by Folger-Hammond, and others, is down 940 feet, and is still going through good iron ore. This is the deepest hole yet drilled on the range, and shows conclusively that there are large bodies of ore on the range.

Navigation of the St. Lawrence river rapids is more dangerous than people suspect. Many a time a steamer in running the Lachine rapids takes a sudden lurch, and it takes all the four or six men at the wheel can do to steady the boat. Narrow escapes are of daily occurrence.

Capt. Cameron, one of the oldest river captains now living, is at the wheel on the steamer Jubilee. The bronzed old sailor is 83 years of age and for years was engaged with the Royal Mail Line steamers. He is now a resident of Lancaster, having gone into the honorable retired list, though occasionally doing a turn to help out some of his friends.

In speaking of the future plans of the Richelieu and Ontario Navigation Co., a director stated this week that two new steamers were in contemplation, and, while nothing definite had been decided upon, they would in all probability begin work on them within the next few months. The idea is to build two new steamers for the line between Montreal and Quebec.

The traffic on the R. & O. Navigation Co.'s steamers this summer has eclipsed that of all former years. Last year was considered an exceptional one, but 1900 beats 1899 by long odds. One recent full return trip by the steamers Toronto and Bohemian was heavier than the largest trip of these two steamers last year by over \$600. All the company's steamers have far more than they can handle. Every trip is overcrowded, and dozens of cots have to be provided in the saloons for passengers who cannot get state-room accommodation.

Passengers on the R. & O. N. steamer Toronto on Sunday, whose destination is the Thousand Island Park, are landed at Round Island Park, as the former place is closed to all steamboats on the Sabbath day. The park is a private place, and the weekly day of rest is strictly observed. Service is conducted in the tabernacle twice on that day. Steamers and yachts with large pleasure parties pass and repass the park, but quietness reigns along its shores. The fourth commandment is diligently kept, and no strangers are admitted within the gates.

At the Canadian Electrical Association convention, held here, 100 delegates were present, on Aug. 29th, 30th, and 31st. Prof. L. A. Herdt, McGill University, Montreal, contributed a paper on "Conditions Affecting the Wave Form of Alterations." Mr. F. H. Leonard, Jr., of Montreal, gave an excellent paper on "Tower Factor as Affecting Operation and Investment, With Special Reference to Induction Motors and Enclosed Arc Lamps." The title of the contributions of M. A. Gordon Grier, and Mr. J. C. Hyde, both of Montreal, was "Rotary Converters." Mr. W. J. Camp, C.

P. R. Telegraph Co., Montreal, delivered a most interesting paper on "Use of Dynamo and Storage Battery in Telegraph Offices."

H. M. Folger, of Kingston, president of the Thousand Island Steamboat Co., says that the excursion business on the river this year was greater than ever before. Among the Thousand Island resorts the business increases year by year, as can be seen by the additions to the "White Squadron" since 1892, three steamers being added in that time to the fleet. The excursion traffic from Kingston to river points has also slightly increased this year over 1899, which was probably the best the Thousand Island Steamboat Co. ever had. Competition on the river has not affected the company. The rates have been lowered somewhat, but the travel increased, as did also the demand for meals on board the steamers.

DETROIT.

Special Correspondence to the Marine Record.

The steel steamer Waccamow, built by the Craig Ship Building Co., Toledo, and hailing from that port, is registered at 1,359 tons net, and 920 tons gross.

Fred. Harmon will have charge of the machinery of the new steamer Capt. Thomas Wilson, just launched from the yards of the Jenks Ship Building Co., Port Huron.

Persons interested in the wreck of the schooner Fontana have recently advertised for bids for her sale in the position in which she now lies, opposite Gratiot light, in the St. Clair river.

The steamer City of London, bound up with a cargo of coal, went aground at Bar Point early Wednesday morning. Her cargo is being lightered by the wreckers Saginaw and Wales.

Col. Lydecker, of the United States Engineer Corps, says no immediate steps will be taken by the department toward securing the removal of the barge Fontana, sunk at the mouth of the St. Clair river about a month ago.

Edgerton Carsons, representing the English underwriters on the steamer Specular, which was sunk off Pelee Point by the Denver, was here this week accompanied by Capt. Sinclair, conferring with prospective bidders on the wrecking job.

The schooner H. W. Sage, sunk in St. Clair river in a collision with the steamer Chicago, has been raised by the McMoran Wrecking Co., of Port Huron, sufficiently to tow to Port Huron for repairs. Her cargo of coal was not lightered, but was raised with the vessel.

Harbormaster O'Neil complains that thieves are stealing the lines from the public life preservers which are placed at intervals along the docks. Three have been taken this summer. There is a heavy penalty attached to the defacing of this property, and if the offenders are caught they will be severely dealt with.

The lumber movement is about the same. The boats are bringing down a large amount of lumber, about all of the tonnage which is set aside for that trade finding employment. It has been thought that when the other freight rates braced up the lumber rate would stiffen also, but this has not yet developed.

Wrecking Master H. W. Baker has removed all but 100 tons of the pig iron constituting the cargo of the sunken schooner J. S. Richards. It is said he is now considering the plan of hitching the powerful tug Champion to the wreck to see if the schooner can be dragged up into shoal water at the foot of Belle Isle.

The following report for the period from July 16 to August 15, 1900, inclusive, of vessels passing through Detroit river, was furnished by Postmaster F. B. Dickerson. Number of vessels passing through during the day, 1,767; during the night, 1,536; total 3,303. For the season, since April 26, 1900, 12,256 vessels have passed Detroit.

There is a great scarcity of marine firemen at all points on the river between here and Port Huron this week. Kendall's marine reporting office at Port Huron has been asked to furnish upward of twenty and not one fireman could be secured. The officers of the North West telephoned from here on Sunday morning asking that twelve firemen be ready for them. None could be shipped.

A tow passing up last Sunday night, supposed to have been the tug Traveler, and her barges, scraped by the wreck of the Fontana, but did no damage. It is only a question of time before some boat strikes the Fontana where she is sunk and may probably block the channel. This would entail an almost complete stoppage of navigation on the lower lakes, and do more harm than any blockade ever known at the "Soo."

The bids for constructing the canal from Lake Huron to Black river were opened this week. Talbot Bros. & Co., of Detroit, were the only bidders for digging canal and their bid is as follows: North route, 27 cents per cubic yard; north cemetery route, 17 1/4 cents per cubic yard; south cemetery route, 18 1/2 cents per cubic yard. Protection pier, \$1,500. It is figured that there are about 440,000 cubic yards in the south cemetery route, 380,000 cubic yards in the north route and 400,000 in the north cemetery route. The bids on four bridges were as follows: Toledo Bridge Co., \$11,149; Massillon Bridge Co., \$11,359; King Bros. & Co., \$11,422. This does not include railroad bridge.

CHANGING CONDITIONS IN THE GERMAN IRON AND COAL MARKETS.

The recent drop in the price of American iron and steel has produced a general feeling of apprehension among the ironmasters and holders of industrial securities in Germany and Great Britain.

Thoughtful and well-informed men in both countries, noting the gigantic strides with which the mining and handling of ores and coal and the production of coke, pig iron, and steel were being developed in the United States, have clearly foreseen the day when, the stress of an abnormally active home demand having been satisfied, the European iron markets would have to meet the attack of an American surplus, manufactured under every advantage of cheap, abundant materials, low freightage, and the highest, most effective substitution of machinery for human labor—conditions which would enable the Americans, when the time came, to reduce prices without serious impairment of a large and profitable output.

Partly as a feeler to test the approach of this critical juncture, a German firm several months ago asked for proposals for the delivery of 100,000 tons of American pig iron. At that time the home demand in the United States was still active, and the American iron men replied briefly in the usual naive, amiable way, giving a price per ton free on board at an American seaport, but leaving the important and difficult item of ocean freight to be figured out by the European purchaser, who is naturally in no position to know whether ships for outward-bound freights are obtainable at an American port, or, if so, what rates are demanded. These early and indefinite offers created the impression here that the Americans were not yet ready or eager to sell pig iron.

But toward the end of May the announcement came that a machine foundry at Prague had closed a contract for 4,000 tons of American pig iron to be delivered at Hamburg for 73s. (\$17.01) per ton between the date of contract and the autumn close of navigation on the Elbe. When this was followed, a few days later, by a similar report that an American firm had offered to a foundry in the Lower Rhine Province a large shipment of iron for 84 marks (\$20) per ton c. i. f. Amsterdam, it was recognized by German furnace men that the hour of danger had come.

Not that the figures proposed were absolutely fatal. Eighty-four marks per ton at Amsterdam would mean, with freight to Westphalia added, somewhere about 99 marks (\$23.16) per ton delivered at the foundry, and this would be a price with which German pig iron could still fairly well compete; and thereupon the commercial press hastened to stiffen up the declining stock market by comforting reassurances that the expected American invasion had not yet begun. These, however, have not served to blind intelligent men to the fact that this offer meant nothing more nor less than that America is already in a position, notwithstanding the present high rates of freight, to deliver iron at Amsterdam somewhat cheaper than German furnace men charge to customers at their very doors. If, with freight of \$4 to \$4.50 per ton, American iron can be landed at a Belgian, Dutch, or German seaport for \$20 per ton, what will be the situation when Southern iron—coming as undercargo in cotton ships from Norfolk, Mobile, or New Orleans, or brought in the great low-powered colliers that will yet be built—shall be carried from shore to shore at a rate of \$2 per ton or less? With all the urgent home demand of last year, Germany exported 182,090 tons of pig iron in 1899, of which 101,433 tons, or more than half, went to Belgium. Under present conditions, that item of export is already as good as lost. Every intelligent expert in Germany knows that the high wages paid to American labor have had the natural effect of forcing the managers of American iron and mining industries to practice the utmost economy in that costly item, and this has compelled the invention and employment of highly perfected machinery, against which even the far cheaper labor of Europe can no longer compete on equal terms. When to this is added the other fundamental advantages of exhaustless deposits of ore, limestone, and coal, cheap transportation, and smelting and manufacturing plants of large capacity and modern construction, it needs only a corresponding development of ocean tonnage to place the future mastery of foreign markets securely in American hands. Says the London Statist: "Over and above all, the shadow of America is towering over the market."

The Berlin Boersen Courier of June 13, discussing the situation in a philosophical spirit, recognizes the gravity of the competition which the German producers of pig iron

will henceforth have to meet, advises them to reduce their selling prices at once, without being forced to do so by the influx of foreign iron, states that large contracts for the delivery of American pig iron in Germany have recently been signed, and adds that all this will be a great boon to the makers of hardware and many small articles of iron and steel, who have been compelled to almost suspend operations by the high cost of materials. Having enjoyed a long period of exceptional prosperity, the ironmasters' syndicates are now besought to gradually and steadily reduce the selling prices of their products to the lowest reasonable figure, and thus not only keep the home market in their own hands, but increase thereby the consumption of metals by stimulating railway and bridge building and car, railway, and ship construction—all of which have been restricted by the high cost of iron and steel. In all this they are advised to act unitedly and openly, and to avoid secret underbidding and everything which might be calculated to engender panic and unduly depress the market. There seems to be no mistaking the fact that the period of highest activity in the metal industries, in Germany as elsewhere, has been reached; and, although business is still brisk and many establishments filled with orders for some time to come, the average period of delivery has been reduced in some cases from six or eight months to as many weeks. So far as can be seen, there is as yet no abatement in the demand for machinery; the Baden Railway administration recently closed a contract with a Lower Rhine syndicate for 300,000 tons of rail and steel ties, and the car builders are working night and day upon orders that will occupy them throughout the year.

These changing conditions in the iron and steel industries have brought into renewed importance the unsatisfactory state of the coal market. With all the extraordinary efforts put forth by the German coal-mining syndicates during the past three months to increase their output and supply the urgent demands of consumers, coal is still not only dear, but scarce and difficult to obtain; and the trade journals which profess to treat the subject exhaustively, generally agree that German consumers must accept the fact that they will have to pay high prices for coal and coke for a long time to come. This was bad enough during the flush times when iron and steel were selling for prices that could easily justify and recoup the cost of expensive raw materials; but with the metal market past its zenith and a general decline in prices not only inevitable, but already begun, the stubbornness of the coal market becomes a serious element in the problem. Complaints and recriminations are heard against the coal and coke syndicates, which are accused of rapacity and of deliberately keeping the output so far below the requirements of consumption as to maintain the panic prices built up during a critical period, which is now past. So great is this feeling that a few days ago representatives of a number of boards of trade in the Rhine Province and Westphalia met at Cologne, and after a vigorous discussion, formulated an elaborate demand upon the coal syndicates, which had not been invited to attend or take any part in the conference. These demands covered important modifications in the conditions hitherto enforced by the syndicates in their sales to dealers and large consumers, and insisted that the large export coal trade should be abandoned or seriously reduced, and German coal kept at home. It was pointed out that, notwithstanding the necessities of the four months ended April 30, the exports of German coal had reached 5,203,152 tons, an increase of 690,953 tons over those of the corresponding period in 1899; whereas the usual imports from the Bohemian mining region had been seriously reduced by the strike of miners and the extortionate demands of the operators.

The force of such an argument as this could not be denied, and the syndicate managers have replied that their contracts for the coal supplies of the Roumanian railways (60,000 tons per annum) would not be renewed, and that a similar contract with the railways of Sweden, which the syndicate a year ago made a vigorous effort to secure, would be likewise given up at the end of the year. There is another five-year contract for gas coal with the city of Paris, which will have to be fulfilled, but all other foreign contracts were for one year only, and will not be renewed at expiration. Hitherto, the syndicates have had a rule to sell not less than 500 carloads of coal to one purchaser, and this operated to force all small consumers to buy their supplies from dealers or middlemen. At the demand of the meeting at Cologne, this minimum limit has been reduced to 250 carloads, which will permit an increased number of consumers to buy directly from the syndicate.

These concessions are good so far as they go, but they can at best only serve to mitigate the difficulty, which is based upon the fundamental and stubborn fact that the consumption of coal in Germany, Russia, Austria, Italy, and France has outgrown the normal home supply of those countries; that as mines grow deeper and wages and costs of living increase, the expenses of mining, and therefore the cost of producing coal, have become greater; and that, in common with the iron industries, shipbuilding, and other branches of manufacture, coal operators everywhere have naturally sought the opportunity to make greater profits, and this they will continue to do as long as the demand for fuel continues. The one controlling force which consumers have in their hands is increased imports. The coal syndicates regulate practically the entire domestic supply, and are too powerful and ably managed to be swayed by any argument that does not appeal to their interests. As the prices of finished products decline, the necessity for cheaper raw materials—notably coal and pig iron—will become more urgent, and this necessity will continue to present an opportunity for American exporters. Whether a wiser, more far-sighted economy might not dictate that these materials should be worked up at home and only the ultimate finished products exported is, of course, another question which need not be considered here. Intelligent opinion in Europe concedes that when values in the iron and steel markets have settled down to a normal level, the Americans, by virtue of their power of cheap production, will remain masters of the field. It remains to be seen whether they will strengthen their one weak point—ocean tonnage under their own flag—and play the commanding role to which they are entitled.

FRANK H. MASON, Consul-General.

Berlin, June 20, 1900.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, report the condition of the Eastern freight market as follow:

Business generally has been broadening, as a comparison of this week's fixtures with the list of the preceding one will show, and the tendency of freights in every department has been for an advance this has been most pronounced in charters from the Atlantic cotton ports and partaken into a lesser degree by those closed from the Gulf ports and for coal from the northern ports. Rates for time boats have been well maintained and grain fixtures likewise show some advance, in consequence of a somewhat better inquiry for room. Owners on the other hand appear at last to have given up their waiting attitude and during the last few days have offered tonnage quite freely, although at advancing rates, so that at the time of writing, the most pressing wants of charterers in all directions, having evidently been filled, the advancing tendency of our market has been checked and we may experience some reaction from the top rates latterly established in various trades.

The firmness so long shown in our market for sail tonnage continues unabated and rates are slowly advancing.

List of charters is exceptionally light but the few fixtures which have taken place show full figures and we can only reaffirm our opinion, that the present aspect of the market is decidedly in favor of owners.

WRECK AND CASUALTY REPORT FROM JULY 16 TO AUGUST 15, 1900, INCLUSIVE.

Four casualties were reported entailing damage to the amount of \$16,950; fog is reported to be responsible for all but \$200 of this amount.

1. July 7.—Schooner John Magee sprung a leak during a gale near the Dummy Light, Lake Erie; damage \$200.

2. July 12.—Steamer Vega grounded in Pelee Island passage, near Amherstburg, Ont., during foggy weather; damage, \$750.

3. July 16.—Steamer Thomas Maytham stranded at North Point, near Milwaukee, during foggy weather; damage to vessel, \$12,000; cargo, \$4,000.

4. July 17.—Schooner Sogas, in gale on western end of Lake Erie, lost all her sails; small loss.

Note.—Several collisions occurred, not due to weather conditions, but owing to loss of life they are here given.

July 30.—Sage and Chicago collided off Parsons Island and one sailor was drowned.

August 1.—Steamer J. W. Moore collided with schooner John Richards, in Detroit River, off Walkerville, Ont., and two of the crew of the latter were drowned.

August 3.—Schooners Santiago and Fontana had a collision near north end of the St. Clair river, and one of the crew of the latter was drowned.

AMERICAN CEMENT.

[COMMUNICATED.]

The interest shown by the readers of THE MARINE RECORD in the manufacture and application of Portland cement, and their appreciation of my little book "20th Century Cement,"* induced me to think that a few more remarks on the same subject might not prove unattractive.

I propose in this present paper to throw a little side light on Portland cement manufacture as carried on in this country, and to compare it with the European methods. The matter has been brought forcibly to my notice by the attempt of the American Carbonating Cement Co., of Baltimore, to apply their process, previously fully described, to American Portland cement. With high grade English and German cements this process always succeeded, as also with slag, and with the genuine Rosendales, to which last I shall again refer, but with American Portlands, and what may be described as "Bastard Rosendale," which have assumed the name without the slightest resemblance either chemically or mechanically to the genuine Ulster County cement, the process has not given anything like the same results. This opens out the question as to why there should be such a difference in behavior of European and American cements, and I lay the result of my investigation before your readers.

In the first place I find that American cements are not properly airslacked, on the contrary I find they, as often as not, are sent out hot from the mill. No European maker who has any regard for his reputation will ship cement under 6 to 8 weeks. This one fact alone is sufficient to account for the non-efficiency of the process I referred to when applied to American Portlands.

A delusion enjoyed by many makers on this side is that their product has no free lime. If the heat of the kiln were sufficient to bring about a complete combination of the various minerals used, their idea might be correct; but it is not sufficient. If it were we should have a clinker as inert as slag. Then if there be no free lime it is pertinent to ask why their experts when testing always wear gloves. It is, of course, possible to treat this portion of our subject in a more technical way, but I prefer conventional to scientific phraseology in writing for the average reader.

Some American Portlands throw off an excessive amount of free lime after being in water for 24 hours, and they keep up the discharge for a very long time. Others again do not throw off so much lime, but their sand carrying capacity does not rate so high in proportion to the real strength as the former or high limed kind.

A common complaint against American cements is their want of uniformity. Time and again customers will tell you that they get one good parcel followed by a very inferior lot, and vice versa. The defect seems to me to be in the manufacture, and having located the cause of the trouble, I will suggest a remedy which I think will largely remove the objectional qualities of American cements. Users should pay no attention to such stories as "every barrel is tested before it goes out," for, even if true, the simple process of testing will not convert a worthless into a good cement.

The remedy I suggest is simply that makers pay more attention to their own proper business, instead of concentrating all their attention on their testing room. It is no uncommon thing in a mill where there is no practical man employed, to see manager, chemist, tester, and a book worm or two discussing failures and complaints, and attributing them to some imaginary chemical source, while all the while the true solution of the difficulty is staring them in the face. Suppose we dispense with the theorists and take the manager into his mill, what do we find? Often a raw material containing quite as much sulphuric acid as is admissible, this is then improperly dried in a drier where the products of combustion pass through the cement and thereby contribute more sulphuric acid.

The drier I refer to in my book has not this defect, and costs little to put up and to operate. Next we find the mechanical mixture of the raw ingredients cannot be carried out under such conditions. Still, good or bad it goes to the rotary kiln, where it frequently absorbs from the coal enough sulphuric acid to ruin any cement, and that without taking into account the sulphur it has already got, and is going to get afterwards. This fault may be cured by changing the character of the fuel, and the cost of that, without reverting to oil, would not be much increased. We have now got back to "free lime;" the cement must be airslackened, not thrown into a deep bin, and allowed to lie there, but the operation must be properly performed. Assuming that

the raw materials are good, there is no doubt but that a careful attention to the above suggestions will result in the production of a cement of the highest class.

Returning again to the Ulster County or Rosendale cements, I have been agreeably surprised to find how my predictions as to the success of the carbonating process have been fulfilled. It would seem as if this old standard article was going to recover much of its lost ground, and contest on favorable terms with Portland. Carbonated Rosendale is slow setting, of a Portland color, does not crack, is very plastic, and improves on the well known quality possessed by Rosendale cements, of gaining in strength for a long period. In a month it is, with 3 sand as strong as many American Portlands, and at 2 months it has equalled a high class German cement, also with free sand. It has been long thought that cements of the Rosendale class needed little to bring them up to an equality with many Portlands, and it appears as if the time for this had now come. The bastard or imitation Rosendales are not to be confounded with the genuine article, the carbonating process may, to some extent, apply to them, but they have defects in their origin and manufacture which it will be difficult to remove.

TH. ZWERMANN.

WORLD'S PRODUCTION OF COPPER: CONSUMPTION IN GERMANY.

Vice-Consul Monaghan writes from Chemnitz, May 23, 1900:

The following table, taken partly from official and partly from private statistics, gives some interesting facts, as it shows how completely North America surpasses other lands in the production of copper. It shows, also, that the production is hardly equal to the demand; for, in spite of increased prices, it has advanced only a little more than 9 per cent.:

Country.	OUTPUT.					
	1898	1899	Increase.		Decrease.	
	Tons.	Tons.	Tons.	percent	Tons.	percent
Algeria	50	.....	.....	.....	50	100
Argentine Re-public	125	65	.....	.....	60	48
Australasia	18,000	20,750	2,750	15.3	.....	.....
Austria-Hungary	1,540	1,505	.....	.....	35	2.3
Bolivia	2,050	2,500	450	21.9	.....	.....
Canada	8,040	6,732	.....	.....	1,308	16.3
Cape Colony	7,060	6,493	.....	.....	570	8.1
Chile	24,850	25,000	150	0.6	.....	.....
Germany	10,085	23,460	2,375	11.3	.....	.....
England	550	550	.....	.....	.....	.....
Italy	3,435	3,000	.....	.....	435	12.5
Japan	25,175	27,560	2,385	9.5	.....	.....
Mexico	15,668	19,335	3,667	22.9	.....	.....
Newfoundland	2,100	2,700	600	28.6	.....	.....
Norway	3,615	3,610	.....	.....	5	0.1
Peru	3,040	5,165	2,125	69.9	.....	.....
Russia	6,000	6,000	.....	.....	.....	.....
Spain and Portugal	53,225	53,720	495	0.9	.....	.....
Sweden	480	520	40	8.3	.....	.....
North America	239,241	265,156	25,915	10.8	.....	.....
Total	434,329	473,818	39,489	9.1	.....	.....

In regard to the consumption of copper in Germany, Consul-General Guenther, of Frankfort, under date of June 7, 1900, says:

The consumption of copper in Germany showed very little increase last year, although it grew very rapidly during the five years, 1894-1898, inclusive. The total supplies for consumption last year, according to the figures collected by Messrs. Aron Hirsch & Son, of Halberstadt, were 102,618 metric tons, against 101,519 tons in 1898 and 62,955 tons in 1894. The total imports into Germany for 1899 were 89,746 tons and the exports 20,304 tons. The stocks held in Germany at the close of the year were very low.

THE following details have been received from vice and acting consul Monaghan, of Chemnitz, under date of June 16, 1900. The direct road from the Elbe to the Baltic Sea offers a great saving both in time and money. Everything has been calculated for a large increase of trade. This can be seen from the fact that now the towing will be done by three tugs; later, by electrical appliances. The passage requires from eighteen to twenty-one hours. The finishing of this canal should make great changes in the commercial relations between the lands bordering on the Baltic Sea. Wares which up to this time could not be shipped, on account of the charges for freights on the railroads, can now be brought in.

NOTES.

THE production of iron ore in the United States for the year 1899 surpassed all previous records. The total output for the year amounted to 24,683,173 long tons, which was 27 per cent. larger than the output of the previous year. No other country has ever exceeded this tonnage of output, the nearest approach being that of Great Britain in 1880, when a total of 13,062,000 tons was mined in that country. The total value at the mines as reported by the producers was \$34,999,037. It seems that in the iron industry, as in all other of leading importance, 1899 was a jubilee year in the United States, and yet, so far as iron, coal and other minerals are concerned, we have only nibbled at the crust of the pie.

ON page 3 of our current issue will be found an advertisement of the Elastic Seam Composition. Is elastic and flexible; does not harden; does not crack; adheres to sides of seams; is not affected by climatic changes; is not affected by salt or fresh water. C. S. Crosby, sailing master of the yacht Coronet, after his cruise to Japan with a scientific expedition, says: "The temperature of the different zones had no deleterious effect on the Elastic Steam Composition. It proved so elastic that it yielded to the swelling and shrinking of the deck planks without cracking." A filler for decks; all kinds of seams above and below water. For cracks and checks in masts, booms, spars, rails, etc. Cole & Kuhls, sole manufacturers, foot of 24th Street, Brooklyn, N. Y., W. E. Arnold, is sales agent.

OUT of the wide and varied range of pneumatic tools made by the Chicago Pneumatic Tool Co., offices 635 Monadnock building, Chicago, Ill., riveters, hammers and drills have been chosen as the subject for a special edition of its catalogue No. 6. Fine, full-page cuts from photographs show these in active operation in a great variety of duty; chipping iron and steel castings, doing general foundry work, beading locomotive flues, chipping and cutting out the inside sheets of fire boxes, cutting off stay bolts, calking riveted water pipe, calking and chipping under water, driving $\frac{3}{4}$ -inch rivets on marine boiler work, driving $\frac{1}{2}$ -inch rivets on structural work of an elevated railroad, on bridge erection work, on shipbuilding work, in use with a shell riveting attachment, flush deck riveting, field riveting a plate girder span, on tank work, grog riveting, drilling, reaming and tapping in any position, working underneath railway cars, in wood and iron, fine rolling, driving boring bars in blast furnace work, in machine shop service, etc.

THE rate at which commerce and shipping are growing at San Francisco, and indeed all along the Pacific coast, is matter of self-gratulation to the people there to whom the fact is of such moment. In a recent article on that subject the Chronicle, of San Francisco, explains that the prospects are that within a short time there will be at least 125 deep-sea steamships regularly passing in and out of the port. Most of these vessel will register more than 3,000 tons each, while some will reach 12,000 tons. All of the vessels will be engaged in the ordinary channels of commerce. In addition to this the port has been called upon to furnish facilities for United States Government transports, while the German Government already has on the way there a fleet of transports of larger tonnage than any vessel engaged in commerce which has yet passed through the Golden Gate. The cause of this is largely the extraordinary activity in the Orient, but it is not unlikely that the development of commerce at the port will continue even when peace is restored.

CONSUL HILL writes from Amsterdam, June 20, 1900: The new Elbe and Trave canal, which has been building five years and has been completed at a cost of 24,500,000 marks (\$5,831,000)—of which Prussia contributed 7,500,000 marks (\$1,785,000) and the old Hansa town of Lubeck, which is now reviving, 17,000,000 marks (\$4,046,000)—was formally opened by the German Emperor on the 16th instant. The length of the canal—which is the second to join the North Sea and the Baltic, following the Kaiser Wilhelm Ship canal, or Kiel canal, which was finished five years ago at a cost of 156,000,000 marks (\$37,128,000)—is about 41 miles. The available breadth of the new canal is 72 feet; breadth of the lock gates, 46 feet; length of the locks, 87 yards, the depth of the lock, 8 feet 2 inches. The canal is crossed by twenty-nine bridges, erected at a cost of \$1,000,000. The span of the bridges is in all cases not less than 30 yards and their height above water level about 15 feet. There are seven locks, five being between Lubeck and the Moller See—the highest point of the canal—and two between Moller See and Lauenburg-on-the-Elbe.



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CLEVELAND, O., SEPTEMBER 6, 1900.

UNITED STATES SHIP BUILDING.

Complete official returns for the fiscal year ended June 30, 1900, show that 1,446 vessels of 393,168 gross tons were built and documented in the United States. Since 1856 this record has been exceeded only twice: In 1864 when 415,740 gross tons were built, and in 1874 when 432,725 gross tons were built.

The construction may be classed according to the following types: Schooners, schooner barges, and sloops 499 of 109,603 gross tons; Great Lake steam vessels 25, of 97,847 gross tons; canal boats and barges 523, of 74,860 gross tons; ocean screw steamships 20, of 60,369 gross tons (of which all but one, the Maracaibo, 1,771 gross tons, were built wholly or principally for trades reserved by law to American vessels); river steamers 375, of 44,282 gross tons; square rigged vessels 4, of 6,205 gross tons.

The steam vessels built—420 of 202,498 gross tons—surpass the record, the nearest approach being 1891, when 488 steam vessels of 185,037 gross tons were built.

The steel vessels built—90 of 196,851 gross tons—exceed the previous record year 1899, when 91 such vessels of 131,379 gross tons were built. Cleveland, Ohio, ranks easily first as builder of steel vessels, with 9 steamships of 42,119 gross tons, followed by Newport News, 7 steamships of 28,202 gross tons; Chicago, 5 vessels, 24,504 tons; Detroit, 4 steamships of 15,693 tons. During the past decade the steel steam vessels built in the United States aggregate 465, of 742,830 gross tons, of which 198 of 450,089 gross tons were built on the Great Lakes. For comparison it may be noted that the British Board of Trade reports that 727 steel steam vessels of 1,423,344 gross tons were built in the United Kingdom during 1899. During the ten years 69 steel steam vessels of 194,080 gross tons were built at Cleveland, and 110 of 138,593 gross tons at Philadelphia.

The total tonnage built and documented on the Great Lakes during the year, 125 vessels of 130,611 gross tons, is the largest in the history of that region. The total for the Middle Atlantic and Gulf coasts, 605 vessels, of 135,473 tons exceeds any record since 1872. The total for the New England coast, 199 vessels of 72,179 gross tons has not been equaled since 1891, while the product of the Pacific coast, 300 vessels, of 40,396 tons is surpassed only by the returns of 1898 and 1899. Construction on Mississippi river and tributaries, 217 vessels, 14,509 tons is 9,000 less than 1899. The foregoing figures do not cover yachts or government vessels.

The Bureau of Navigation reports 101 vessels, of 31,564

gross tons, were built in the United States, and officially numbered during the month of August, 1900, as follows:

	WOOD		STEEL		TOTAL	
	SAIL		WOOD		STEAM	
	No.	Gross	No.	Gross	No.	Gross
Atlantic and Gulf.....	42	11,283	16	792	2	661
Pacific.....	5	2,891	4	2,075	1	16
Great Lakes.....	1	17	5	151	3	11,608
Western Rivers.....	4	91	18	1,979	...	22
Total.....	52	14,282	43	4,997	6	12,285
					101	31,564

The largest steel steam vessels included in these figures are: Princeton, 5,125 tons, built at Lorain, Ohio, and owned by American Ship Building Co.; Waccamaw, 1,359 tons, built at Toledo, Ohio, and owned by Craig Ship Building Co.; Rensselaer, 5,124 tons, built at Cleveland, Ohio, and owned by American Ship Building Co.; wooden schooner George W. Wells, 2,970 tons, built at Camden, Me., and owned by John G. Crowley.

The foregoing figures do not include craft without motive power of their own. From other sources than construction 1 vessel of 2,953 gross tons were added to the merchant fleet, the principal one being the steamship Argyll, 2,953 tons, by Act of Congress.

CHICAGO RIVER TUNNELS.

Chicago street railway companies have filed an answer to the mandamus petition of the city to compel the lowering of the river tunnels. The answer sets forth that the great proportion of vessels navigating the river are less than fourteen feet draught, and that the interests to be benefited by a channel of twenty-one feet are not so important to the public, either in the number of men employed, capital invested or convenience to the public, as are the transportation facilities of the defendants. The claim is advanced that the jurisdiction of the city of Chicago over the river bed ceased, with the passage of the act creating the sanitary district. The defendants assert that at the time of the construction of the several tunnels, they were at a sufficient depth below the surface of the river to permit free navigation. It is declared that the cost of lowering the tunnel at Van Buren street to the grade of twenty-one feet below the surface of the river, would aggregate \$600,000, and to the thirty-foot grade, as required by the ordinance of the sanitary district, an additional \$830,000. The expense of preparing the approaches is estimated at \$2,000,000. The cost would be about the same for the other tunnels. The LaSalle and Washington street tunnels are leased from the city by the street railroads, and in these cases the defendants protest that the city has no right to impose new conditions on the companies. The companies also urge that the lowering of the channel of the river would undermine the buildings located beside it, and compel the construction of new docks along the whole river front.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—NEW YORK.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
Washington, D. C. September 5, 1900.

OSWEGO BREAKWATER LIGHT STATION.—Notice is hereby given that, on or before September 30, 1900, the color of the tower at this station will be changed from brown to white.

This light station is situated on the crib inside the angle of the breakwater, west side of the entrance to Oswego river harbor, southerly side of Lake Ontario, N. Y.

By order of the Light-House Board:

FRANCIS J. HIGGINSON,
Rear-Admiral, U. S. Navy, Chairman.

ORDERS have been received from St. Petersburg by the Russian naval inspectors at Cramps' ship yards, which will necessitate a new trial by the cruiser Variag before her formal acceptance by the Russian government. This is due to the accident which happened during the last trial, when the head of one of the high pressure cylinders was cracked. A sustained speed of 23 knots for twelve hours is required by the contract. The vessel exceeded this by 1.6 knots for six consecutive hours, when the accident occurred. It was not expected that a new trial would be demanded, as the accident is one of common occurrence aboard first-class ships. No date for the new trial has been decided upon.

DECades of SPEED.

In the latter part of 1883 the writer dealt, in the columns of an engineering contemporary, with the possibilities of a 40 knot steamer. As the article suggested, *inter alia*, quadrupling the then prevailing boiler pressure, doubling the number of revolutions and halving the weight of fuel to be carried, by substituting oil for coal, needless to say it raised some considerable amount of controversy, the general consensus of opinion plainly leading to the idea that the writer was a "crank." Indeed one paper, more outspoken in its comments than its fellows, went so far as to state that "this idle dream of a visionary will never be realized."

Barely two decades have elapsed since the article appeared and the Viper has already come near, and her sister ship the Cobra, we believe, come nearer to realizing the "idle dream" of 40 knots. This, however, has yet to be proved; but, if we divide what we may term the existence of practical steam shipping into decades, six such will embrace it, and into the last of these the naval architect and marine engineer have compressed the greatest and most rapid of all their improvements. Whether the ship be "liner" or "tramp," battleship or cruiser, or torpedo craft, the last ten years has witnessed the greatest development of the speed, power and dimensions of each type.

Of course, there were earlier exceptions to the general rule, as, for instance, the Great Eastern and the enormous Italian battleships, but these were abnormal growths and held no place in the gradual evolution of larger ships and higher speeds. As a general proposition, one may say that the large high-speed ship came in with the twin screw, the City of New York and the City of Paris, circa 1889, being the first ships of any great size to embody twin screws driven by separate engines placed in two distinct water-tight compartments. These vessels were of 15,000 tons, and averaged 20 knots, with 20,000 i. h. p. The Paris quickly broke the record for the trans-Atlantic trip, and we may take it that 20 knots was the maximum speed in 1890, or at the beginning of our last decade, the City of Rome and Aurania, with their 17 knots being the quickest vessels during the early '80's, while the 15 knots of the Adriatic constituted a record in 1871, as did the Scotia's 13 knots in 1862. In 1850 the Collins liner Atlantic did an average 12 knots. The Atlantic was 2,860 tons, the Scotia 3,870 tons, the Adriatic 3,888 tons, the Aurania 7,269 tons, and the City of Rome 8,144 tons. From these few typical cases, it will be seen that in the three decades 1850-1880, speed had increased from 12 to 17 knots, and tonnage from 2,860 to 8,144 tons, the horse-power of the Atlantic's engines being 2,000 i. h. p., as against the 11,500 i. h. p. of the City of Rome. 1890 saw, as we have just said, the advent of the City of New York and the City of Paris, and the increase of the average to 20 knots, and how rapid the progress has been since then both in speed and size may be gleaned from the following brief particulars of our present-day leading vessels. The Campania followed the two "Cities" in 1893, she being of 19,000 tons, 30,000 i. h. p., and 22 knots. The Campania and her sister, the Lucania, did not hold the speed record long, for in 1897 the North German Lloyd Co. sent the Kaiser Wilhelm der Grosse on her maiden voyage to New York. The new German ship was of 20,000 tons displacement, and engined with 28,000 i. h. p., and soon established her record with 22.62 knots. Two years later saw the Oceanic, of 28,500 tons, 28,000 i. h. p., and 20½ knots, while this year has seen all previous Atlantic records lowered by the Deutschland, with her average of 23 knots right across.

A glance at the performances of the two latest leviathans leaves us open to doubt whether latter-day speeds are not obtained at too great a cost. The Oceanic propels her 28,500 tons of displacement at a cost of 28,000 i. h. p., the Deutschland requires 35,650 i. h. p. to force her 23,000 tons through the water at 23 knots. Thus the Oceanic requires but .98 i. h. p. to move one ton at 20½ knots, while the Deutschland takes 1.55 i. h. p. to move a ton at 23 knots—that is, to gain something less than 12 per cent. on the English ship's speed, her German rival has to exert 56 per cent. more power, and, as we may take the coal consumption per unit of power to be the same in each ship, this implies greater cost and bunker space and more stokers for the Deutschland.

We still adhere to our contention of seventeen years ago, namely, that the 40 knot ship is possible, and we believe now, as we did then, that the 40 knot ship will not be driven by reciprocating machinery.—Ex.

CLEVELAND.

Special Correspondence to *The Marine Record*.

The steel steamer Rensselaer 5,124 gross and 3,827 net tons built at and hailing from Cleveland has been granted official numbers this week by the Bureau of Navigation, Treasury Department, Washington, D. C.

General Manager Collier of the Great Lakes Towing Co., has decided not to bid for the job of raising the wreck of the steamer Specular, sunk in Pelee Passage. Capt. Cyrus Sinclair, who represents the underwriters, has received several bids for the work.

The marine report just completed for the month of August at Ashtabula shows the ore receipts to have been 603,398 tons, making the total for the season thus far, 2,558,018 tons. During August last year 622,422 tons were received. The amount of coal shipped was 197,455 tons, over 122,607 during the month of August, 1899.

Capt. Richard Neville, master of the steamer J. W. Moore, has got into limbo through sinking the schooner Richards, with the loss of two lives, but it is safe to say that when the full circumstances are duly made known Capt. "Dick" will be entirely exonerated from all blame in the casualty. Capt. Neville is one of our most experienced and successful lake shipmasters.

The crew of steamer City of Detroit received \$50 apiece and Capt. McKay received \$100 from Capt. James Corrigan for picking up the body of Miss Corrigan off Cleveland. There is still one body to be recovered through the founders of the yacht Idler. It is specially requested that those who are sailing on Lake Erie should keep a bright look-out and pick up the body when sighted, Capt. Corrigan will amply refund all expenses.

There is no change in the movement of ore. The shipment is confined to the contract tonnage, and even these boats are not getting the best of dispatch. The movement is so light now by charters that it would be almost an impossibility to name a rate that would represent the freight-market. The shippers say that the prospects are that the prevailing conditions will be found in existence all through the remainder of the season.

A charter was made this week but for a single trip at 75 cents, a good sized block of ore to be carried from the head of Lake Superior during September and October was covered at 65 cents. The demand is light all around, but there is not much tonnage on the market. There are a large number of vessels at this end of the route and the ore docks will not be in good shape again until the end of the week. There is no change in coal freights. Shippers to Lake Michigan ports are getting a fair supply of tonnage at 30 cents.

When the passenger steamer Pittsburg left this port on Wednesday for Windsor she had on a good list of passengers. These were making the last trip with the steamer this year. The season for the Pittsburg started late and is closing early yet in common with the other passenger boats she has been having an extraordinary season. The captain reports that each trip she has made out of here the steamer has had on her full quota of passengers. The other Canadian boats have also enjoyed a heavy business all summer, as travel in that direction appears to be on the increase.

The municipal board of control recommended the approval of a contract with the Standard Contracting Co., for the river widening and shore protection at the Superior street viaduct. The contract price is \$52,500. Bids were received and accepted and a contract authorized during the latter part of June. Until the bonds for the improvement were sold, however, the contract could not be approved. Under the contract the company will excavate a channel between the center pier of the Superior street viaduct and the west abutment. Before this work is done a row of piles will be driven around the foot of the abutment to protect it.

It is stated that the shipments of ore from all ports for August were 2,911,622 tons, making the total movement up to September 1, 12,366,022 tons, which is a gain of 1,695,554 tons over the shipment for the same time last year. Shipments for August show a decrease of 102,023 tons, compared with the same month last year, and they are about 125,000 tons below the movement of July this year. Duluth still leads, with Two Harbors second and Escanaba third. In 1899 more ore was moved in August than any other month in the year, so that the falling off last month does not amount to much, and it will probably be more than made up this month. It is now quite certain that the total movement of ore for 1900, including all rail shipment, will come pretty close to the 20,000,000 ton mark.

"I am satisfied," said a vessel owner, referring to recent accidents in the St. Mary's river, "that we would have less trouble in that river and in other shallow channels, too, if some of us had the courage to publicly denounce the vessel owner or vessel master who insists upon his big ship being loaded down to 18½ feet when less than 18 feet should be the limit. The great majority of owners who try to do what is about right in this matter of loading are placed at a great disadvantage by the few who will take chance on big loads at any cost. If government officials are to regulate the movement of ships in the St. Mary's river then let us go a step further and ask them to put a stop to ships coming down with more cargo than they can safely carry through these channels. This is a matter that must be taken up sooner or later and it should be settled at the next meeting of the Lake Carriers' Association."

LETTERS AT DETROIT MARINE POST OFFICE.

September 5, 1900.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Anderson, Mrs. G. H., Wawa- Kessel, John-2, Tempest. Lampson, Archie, Spokane.
Ames, Mrs. D. H., Spinner. Longfield, R. A., Denver.
Brant, Amos, Outhwaite. Lee, Ivar M.
Bangs, Wm. H. Lypscomb, Henry, Mary.
Brussels, Ben. Marriner, J.
Carroll, Martin I., Unadilla. Meyers, Valentine, Commo-
Campbell, J. Roy. Moselle, Mrs. Elmina. [dore.
Coleman, George A. Miller, Wm. A., Bessemer.
Clark, Edward. Malcolm, Jas., D. Houghton.
Crawford, F. S., Berlin. McGaw, Ralph A.
Conway, Daniel, Spinner. McPhee, Neil, Bge 130.
Dowdell, George, Sheldon. McKinnon, Angus, Armour.
Dubrul, Louis H.-2, Tempest. McKenzie, Dan.
Duncan, Wm. Nelson, Mrs. John.
Day, E. R. Pickel, John.
Douglass, Fred. Russell, Geo. F., Vail.
Fink, Guy-2, Iron Age. Ragan, W. H., Venezuela.
Finkle, Hayes, Eads. Rankin, Harry, Maritana.
Frederick, Capt. Charles. Rero, Joe, Baltimore.
Fisher, Joe. Reck, Mike.
Green, T. J. C., Rounds. Rumsey, R. J., R. Richards.
Graves, Edward, J. Owen. Restless, (yacht) letter for
Gordon, Chas. Sambier, Martin. [owner.
Grimley, John, Unique. Sullivan, Mrs. Ed., America.
Gunsolly, Cash, Progress. Terry, Arthur, D. P. Rhodes.
Honey, Oscar-2, Aurania. Tates, Fred, Bge 111.
Hineline, Lester. Weaver, Robert R., Gates.
Hamilton, John. Woodruff, I. D., G. Stephen-
Heidemann, R., Paul. Williams, Clark P. [son.
Johnson, Wm. L. Wallace, Leslie, Sheldon.
F. B. DICKERSON, Postmaster.

FLOTSAM, JETSAM AND LAGAN.

Mariners are warned that Maumee bay is full of floating logs. Several steamers have damaged their wheels there and others will do the same without great care. It is absolutely unsafe at night.

The schooner Sardinia, which went ashore at Hedgehog harbor in Green bay a couple of months ago, has been driven upon the beach high and dry. She still remains intact, however, the seas not having done her much damage as far as can be seen.

During a trip to the Pintsch light crib on Racine reef Saturday light-keeper Knutson picked up a 200 pound anchor and thirty-five fathoms of chain. He also discovered wreckage of the iron steamer Merchant, which went to pieces on the reef twenty-eight years ago. It consisted of plates, frames and the bucket of a wheel.

The Carnegie Steel Co. has written to Capt. Donnelly, of Kingston, Lloyds' inspector, making inquiries as to the success of deep-laden vessels passing through the new fourteen-foot canals in the St. Lawrence. They intend using the canals more than they have been doing, should it be found that vessels can travel through them in safety. Capt. Donnelly, like a good Canadian, states that he sees no reason why the new system will not be a success.

Capt. Patrick J. Larkin, for many years one of the best known captains on the lakes and later known as head of the contracting firm of Larkin, Connolly & Connolly, died at his residence at St. Catherines Friday night, aged sixty-one years. Among the public works on the construction of which Mr. Larkin was engaged during his career as a contractor were the Welland canal, the graving dock and harbor works of Quebec, the graving dock at Esquimaux and the St. Lawrence canal at Iroquois.

The steamer Paris, of the American Line, is being reconstructed at the Harland & Wolff yards, Belfast. She is receiving an entire new bottom and new engines and boilers. Her power and speed will be increased. There will be little change in her exterior appearance, except that she will have two funnels instead of three. The diameters of the cylinders of the quadruple expansion engines will be successively as follows: 38½, 54, 76 and 106 inches, with a stroke of 5 feet and boiler pressure of 206 pounds. The stern of the steamer is to be rebuilt so that the twin screw shafts will be encased in the hull instead of being hung on struts as before. The steamer will be renamed the Philadelphia.

The battleship Alabama, which left Cramp's shipyard, on Monday, for the Brooklyn Navy Yard, has returned, and she will have her bottom cleaned and painted, preparatory to her official trial off the Maine coast. Capt. Sargent said that on her trip from Philadelphia the Alabama acted in fine style, and he expects her to surpass what she is expected to do on her trial trip. After the docking an inspection of her was made by the members of the Board of Inspection, of which Rear-Admiral Rogers is Chairman. The Alabama is a first-class battleship, with a displacement, in fighting trim of 12,500 tons. She carries 1,300 tons of coal, 450 crew, has a speed of 16 knots, with 12,000 horse-power, and will have cost when completed about \$6,000,000.

Report comes of a record-making feat performed on the Toledo docks of the Hocking Valley Railway, in a twenty-four-hour period of coal hoisting. Two Brown hoisting machines in twenty-two hours' actual working time, are said to have transferred the contents of 403 cars, a total of 13,705 tons of coal, to boats lying at the company's docks. This beats a former record of 11,772 tons. The record would have been still further augmented, so it is claimed, but for the fact that the coal was divided up between five boats.

The old steamer Cleveland, of the early-day Northern Transportation Company fleet, which plied between Chicago and Ogdensburg, was subjected to close examination at Chicago by the inspectors, and condemned as unfit for service. Notice to this effect was sent in a formal report to Collector Nixon, who refused her clearance papers. This puts the Cleveland out of sailing. The condemnation is on the hull. Extensive reconstruction has been ordered by the inspectors, and until these are made the steamer will probably be compelled to lie idle. The Cleveland has this season been engaged in the cedar trade. She is owned by William Mueller, and was in charge of Capt. John Higgin.

Isaac Stephenson's yacht Bonita left Escanaba, Mich., at 1 o'clock Sunday afternoon, and reached Marinette a few minutes before 5 o'clock p. m., covering the distance of 64 miles at the rate of about seventeen miles an hour. The Bonita was put in ordinary Monday after a four months' season, during which she traveled several thousand miles. The cost of running her was \$1,500 a month, or \$6,000 for the season. Mr. Stephenson has entertained this year probably 500 people, besides his family, on the Bonita, at his Thunder river resort, and on fishing trips. To do this it has cost him nearly \$10,000, which is more, probably, than any other rich man in Wisconsin spends for the entertainment of his friends.

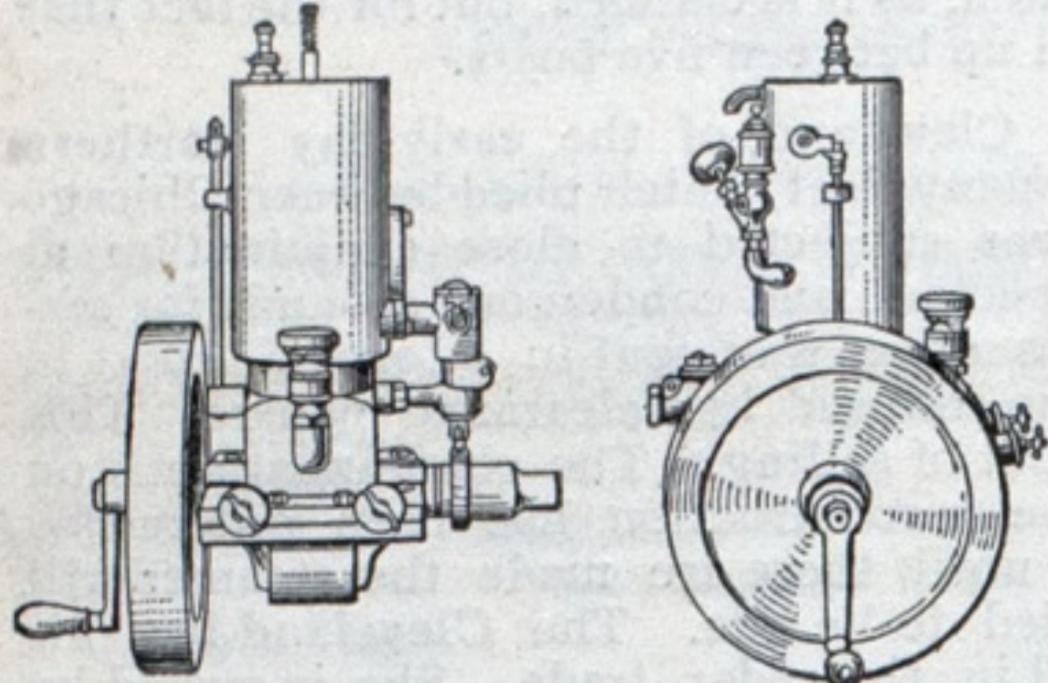
A serious hitch has arisen in connection with the Connors syndicate proposal for the construction of elevators and other port terminals at Montreal, which the syndicate in its last letter to the City Board promised should be commenced on Sept. 1st. The harbor commissioners are awaiting later information from the syndicate, which it is promised in the representation of the syndicate shall be forthcoming. The long period of apparent inaction since the agreement was entered into, and the fact that nothing has been done to prepare for the erection of the structures, have caused a certain amount of misgiving lest the project, which it was claimed would do so much for the port of Montreal, should fall through.

The war between the city of Chicago and vesselowners over attachments for bridge damages is ended so far as the regular lines are concerned. E. J. Henry, representing the Lake Line Agents' Association, had a conference with Corporation Counsel Walker and it was agreed that the line agents would furnish the city with a list of all their boats under a guaranty that proper claims against these craft would be paid. The Association met and adopted the plan of meeting the existing trouble. Steamers not belonging to the lines will have to take their own chances in regard to being attached for bridge damages unless definite arrangements are made between the agents and the city authorities looking toward the prompter payment of losses at the bridges.

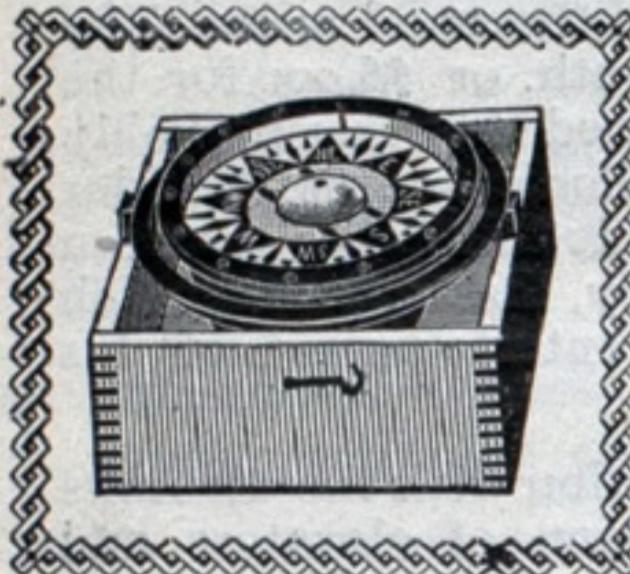
The towing machine was invented and brought out in this country, and is, therefore, a peculiarly American invention, but it is being adopted in foreign countries, because it supplies a want which is long felt. This arrangement is a radical departure from and a great improvement over all known methods of towing vessels. It is the only appliance which has ever been invented which enables large vessels to be towed as readily and as easily as small vessels were formerly. The American Ship Windlass Co., Providence, R. I., the manufacturers of the towing machines, first manufactured a medium-sized machine for towing up to five or six thousand tons of cargo, besides the weight of the vessels. As necessity demanded, they have enlarged the scope of the work for these machines to do, and have designed several larger ones than formerly, and also three smaller sizes of the same. On the lakes they never thought of towing vessels carrying more than three or four thousand tons until this machine was invented. Now they tow vessels carrying double this amount, and, in some cases, they tow two of these vessels, making nearly 15,000 tons of cargo in a single tow, besides the cargo in the towing steamer herself.

It was the hope of Capt. G. W. Stoddard, who was drowned when the Richmond foundered, to see a line of magnificent passenger steamers put on the route between Toledo and Buffalo. He had plans of a steamer drawn, and the amount of money was nearly two-thirds subscribed, but certain of the subscribers died, and the project fell through. The steamers were to cost a million dollars each, and were to be very fast. Liberal patronage was promised by railroads. It was believed that the project would pay big dividends on the investment. The establishment of passenger steamer lines between Toledo and Cleveland, and Cleveland and Buffalo, resulted in the dropping of efforts to build boats for a direct line between Toledo and Buffalo. The matter may yet be revived. The great patronage of the Toledo and Cleveland, and Toledo and Buffalo lines has led many well informed steamboat men to believe that a direct line from Toledo would be very profitable. A boat leaving Toledo would touch at Put-in-Bay and Cleveland, and the returning boat would make Cleveland and Put-in-Bay. The boats would be built to make 20 miles an hour, and would, no doubt, secure a big passenger patronage both ways.—Toledo Blade.

Truscott

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NEW STEAMSHIP COMPANY.

A movement is under way to form a company with ample capital to operate a fleet of "tramp" steamships to be built in American shipyards and to fly the American flag. A number of capitalists in Baltimore have been approached with the idea of taking stock in the company, and the Baltimore Journal of Commerce, is informed that matters have reached the point where an organization may be effected in the near future. The promoters of the company have made calculations on the possibilities of obtaining freight at both domestic and foreign ports in competition with foreign shipowners. It is stated that American vessels of the type recently built at Sparrow's Point, Md., can be operated so economically and will require such a small outlay for ordinary repairs that the profits will be considerably larger than those earned by the British owners of "tramp" vessels, in spite of the fact that the cost of construction in this country at present is from 20 to 25 per cent. greater. The American advantages are due to the fact that the material used, as well as the workmanship, is of a better quality, and that the vessels will obtain a much higher rating than those of the same class built abroad.

It is proposed to let contracts for several vessels of about 5,000 tons carrying capacity, also for a number to carry double this quantity. The headquarters of the organization will probably be in Baltimore.

POPULAR ASTRONOMICAL NOTES.

[COMMUNICATED.]

Most of the constellations that have brightened our evening sky and gladdened our hearts during the past month, will continue their services during the present month. Of course they will all have drifted toward the west, but they will maintain the same relative position in regard to each other. Arcturus in Boötes will be no less beautiful, as it slowly sinks toward the horizon, but Spica in Virgo will lose some of its beauty in the mists, as it nears the western horizon. Antares in Scorpio will still be an object of beauty in our evening sky toward the southwest. Vega in Lyra will slowly descend from its meridian altitude near the zenith, and thus become more accessible with telescope and also by unaided vision. Toward the southeast Fomalhaut in the Southern Fish will become quite conspicuous as the only bright star in that part of the heavens. Toward the northeast Capella in Auriga will once more add its beauty to our evening sky.

Altair in Aquila near the meridian will be at its best during the month.

The so-called winter constellations may now be seen in their beauty in the early morning. Jupiter in Scorpio will continue to be the brightest star in our evening sky during the month, though he will not be quite so favorably situated for telescopic observation. Saturn in Sagittarius will still be an object of interest and beauty when seen through the

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telescope, as he will be nearest the meridian in the early evening.

Venus, Mars and Mercury will be found in our morning sky during the month.

Venus will be the brightest star of the morning, though she has passed her most brilliant phase. Mars will slowly increase in brightness, but will not be at all conspicuous. Mercury may be seen by the sharp-eyed, early riser, when the atmospheric conditions are favorable.

Have had several good views of the new comet. From its present position near the north star it would seem to be an arctic explorer. It is a well-developed telescopic comet, but entirely invisible to unaided vision, and is decreasing in brightness quite rapidly.

September 23 the sun will cross the celestial equator, and day and night will hang in almost equal scale; but after that date the night will claim the larger part of the twenty-four hours, and will continue to increase that claim for months to come. September 23 also marks the beginning of autumn.

The full moon in September is known as the harvest moon, and our satellite will favor us with extra service for several evenings before and after that date. But the increase of moonlight will not be quite so marked as it sometimes is because the full moon occurs so early in the month.

Two pairs of small spots, visible but for a single day, constitute the second of the sun spots observed the past month.

Toledo, Ohio.

D. SATTERTHWAITE.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT Bushels.	CORN. Bushels.	OATS. Bushels.	RYE Bushels.	BARLEY Bushels.
Buffalo	2,013,000	93,000	458,000	.....	47,000
Chicago	11,865,000	700,000	2,661,000	354,000	17,000
Detroit	318,000	79,000	63,000	75,000	3,000
Duluth	6,992,000	269,000	48,000	58,000	131,000
Fort William, Ont.	1,062,000	.....	.....	.....	.....
Milwaukee	795,000	76,000	124,000	7,000	2,000
Port Arthur, Ont.	90,000	.....	.....	.....	.....
Toledo	1,135,000	475,000	1,259,000	30,000	7,000
Toronto	15,000	.....	1,000	.....	.....
On Canals	17,000	542,000	225,000	.....	.....
On Lakes	1,454,000	577,000	870,000	45,000	100,000
On Miss. River	41,000	.....	.....	.....	.....
Grand Total	50,294,000	5,313,000	9,253,000	769,000	549,000
Corresponding Date, 1899	34,768,000	6,738,000	5,085,000	528,000	944,000
Increase	328,000	.....	1,185,000	35,000	32,000
Decrease	.....	2,117,000	.....	.....	.....

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

H. M. Bean, Camden N. J. launched on August 13th the new six-masted schooner which he is building for Captain John G. Crowley, of Taunton, Mass., Captain Crowley will build a seven-masted schooner with a capacity of 6,500 tons of coal if the six-master proves successful.

HOW SLAVES WERE CARRIED IN THE OLD SHIPS.

In the larger ships the space between the top of the cargo and the under side of the deck was sometimes as much as five feet. To devote all that space to air was, in the mind of the thrifty slaver, sheer waste. So he built a shelf or gallery six feet wide all the way around the ship's hold, between the deck and the slave floor that was laid on top of the cargo. On this shelf was placed another layer of slaves, thus increasing the number carried by nearly fifty per cent. The crowding in the big ships, having two decks regularly, was still worse, for a slave deck was built clear across between these two, and the galleries or shelves were built both under and above the slave deck. There were ships where four layers of slaves were placed thus between the permanent decks that were only eight feet apart and there are records of cases where smaller ships—ships having but three feet or so of space between cargo and deck—were fitted with galleries, so that the slaves stretched on their backs had but a foot or less of space between their faces and the deck or the next layer above them. To increase the number carried, when stretched out on deck or shelf, the slaves were sometimes placed on their sides, breast to back—"Spoon fashion," as the slaves called it—and this made room for a considerable per cent. extra. However, in the eighteenth century the usual practice was to place them on their backs, and to allow two and a half feet of air-space above the faces of the slaves, and in this way cargoes of over three hundred were carried. Every one knows how wearysome it is to lie for a great length of time in one position, even on a well made bed. We must needs turn over when we are awakened in the night. But the slaves were chained down naked on the planks of the decks and shelves—planks that were rough just as they came from the saw, and had cracks between them. No one could turn from side to side to rest the weary body. They must lie there on their backs for eighteen hours at a stretch, even in pleasant weather in port. Hard as that fate was, new tortures were added with the first jump of the ship over the waves. For she must roll to the pressure of the wind on the sails, so that those on the weather side found their heels higher than their heads, and when the ship's angle increased under the weight of a smart breeze, the unfortunates sometimes sagged down to leeward, until they were stopped by the irons around ankle and wrist. They were literally suspended—crucified by their shackles. Even that was not the worst in their sufferings that grew out of the motion of the ship, for she was rarely steady when heeled by the wind. She had to roll, and as she did so the slaves sometimes slid to and fro, with naked bodies on the rough and splintery deck. There was never a voyage even in the best of ships where the slaves did not suffer tortures from mere contact with the slave deck. To the sufferings due

to these causes were added other torments, when the weather was stormy. For then it was necessary to cover the hatches lest the waves that swept across the deck pour down and fill the ship. The slaves were confined in utter darkness, and the scant ventilation afforded by the hatchways was shut off. Serious as this was, still worse must be told. The negroes were made violently seasick more readily than white people even—they sometimes died in their convulsions. The heat and foul air quickly brought on more serious illness; but there the slaves were kept in their chains for days at a stretch, wholly helpless and wholly unattended.—From "The Slave-Trade in America," by John R. Spears, in the September Scribner's.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 11TH DISTRICT,
DETROIT, MICH., August 29, 1900.

Information is hereby given that a beacon light has been established in the water on the point of a shoal making out from Brush Point on the southeasterly side and near the head of St. Mary's river, Michigan.

A fixed white light will be shown from a lens lantern twelve (12) feet above the level of the lake.

This light will be lighted on or about Monday, September 3, 1900.

Information is hereby given that on or about August 30, 1900, the following named newly established lights in Portage river, Mich., will be lighted:

PIERHEAD LIGHT—PORTAGE RIVER ENTRY—A fixed red light shown from a lens lantern on a white structure on the extreme end of the pier on the east side of the Portage river entry.

PORTAGE RIVER FRONT RANGE LIGHT.—A fixed white light shown from a lens lantern in a white house on the extreme end of the west pier, Portage river entry, and forms a range for entering the Portage river, Mich., with the rear white light shown from a tower on the light-keeper's dwelling on the inner end of this pier. This front range light takes the place of a small white lantern shown from the same position, since the destruction of the previous light.

PRINCESS POINT LIGHT—Known as Light No. 11 in Portage river, Mich. (No. 336 in List of Lights and Fog Signals, Northern Lakes and Rivers, 1900.)—This light was formerly a fixed white light shown from a lantern on the northeasterly bank of the Portage river at the lower turn off Princess Point, Mich., and nearly opposite Light No. 9. It has now been changed to the north bank of the Portage river opposite its old position, and will show only a red sector of 180 degrees. It is so adjusted that when vessels going up the channel come into this red sector they will have arrived at the turning point of the curve which they must follow around without special guide as to distance from adjoining objects until they come on the range formed by Lights Nos. 12 and 10.

By order of the Light-House Board.

J. C. WILSON, Commander, U. S. N.
Inspector 11th District.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—PENNSYLVANIA.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
WASHINGTON, D. C., August 31, 1900.

PRESQU'ILE FOG-SIGNAL STATION.—Notice is hereby given that, on or before September 25, 1900, the color of the

fog-signal house at this station will be changed from brown to white.

This fog-signal station is situated on the northeasterly shore of Presqu'ile, southerly shore of Lake Erie, about 1 1/4 statute miles N. 35° 10' W. (N.W. 1/8 N.) from Presqu'ile pierhead light-house (on the outer end of the pier at the entrance to Erie Harbor), and 1 1/8 statute miles N. 78° 23' E. (E. by N.) from Presqu'ile light-house, (on the northerly shore of the peninsula).

CONNEAUT RANGE REAR LIGHT STATION.—Notice is hereby given that, on or about October 1, 1900, the color of this rear light will be changed from white to red.

Conneaut Range is situated on the southerly shore of Lake Erie, and on the westerly pier at the entrance to Conneaut Harbor.

STURGEON BAY CANAL LIGHT STATION.—Notice is hereby given that the flashing light at this station, on the northerly side of the entrance to Sturgeon Bay canal, westerly side of Lake Michigan, will be temporarily discontinued for repairs from about September 10 to September 20, 1900.

During that period the light will show fixed white. After the repairs have been completed, the present characteristic will be restored.

By order of the Light-House Board.

FRANCIS J. HIGGINSON,
Rear Admiral, U. S. N., Chairman.

BRANCH HYDROGRAPHIC OFFICE, CLEVELAND, O.

GRAY'S REEF LIGHT-VESSEL.—Vessels drawing 18 feet are warned to exercise special care in passing through the channel south and east of Gray's Reef light-vessel. Several vessels have struck in this neighborhood on a spot about 3/4 of a mile to a mile, south to S.S.E. of the light-vessel. The Michigan is now engaged in developing the spot, and results will soon be published.

GEORGE N. HAYWARD,
Lieut., U. S. Navy.

NATIONAL TONNAGE.

Flag.	Steam and Sailing Vessels Owned According to Lloyd's Register Book, 1899-1900.	
	No.	Tons.
British { United Kingdom.....	8,973	12,926,924
Colonies.....	2,025	1,061,584
United States.....	* 2,739	1,872,245
Austro-Hungary.....	277	380,414
Danish.....	796	511,958
Dutch.....	381	455,609
French.....	1,182	1,242,091
German.....	1,676	2,453,334
Italian.....	1,150	875,851
Norwegian.....	2,528	1,694,230
Russian.....	1,218	643,527
Spanish.....	701	608,885
Swedish.....	1,408	605,991

*Excluding vessels trading on the lakes.

(Vessels under 100 tons are not included in this return.)

In an article on Imperial Defence in the Canadian Military Gazette Capt. M. Ward says: "The sea itself is a desert; its trade routes are the trails across it, and the harbors are oasis. Now, if the stronger of two desert powers commands every large oasis and every principal trail, the caravans of the weaker power must take to the desert and ultimately perish. * * * Search naval history and you will see how these evils are brought home to every country whose seaboard is commanded by the enemy."

TONNAGE FRACTIONS.

In marine papers fractions of tons are to be omitted in the totals of gross and net tonnage, but not in the items which make up those totals.

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
Washington, D. C. August 23, 1900.

Sir: I have to inform you that Department Circular No. 46, of March 7th, 1898, requires the omission of fractions from the gross and net tonnage in all marine papers. This circular, however, does not authorize the omission of fractions from the several parts making up the gross tonnage, nor from the deductions from gross tonnage.

Please observe these requirements in future.
Respectfully, E. T. CHAMBERLAIN, Commissioner.
COLLECTOR OF CUSTOMS, Hartford, Conn.

CHANGE OF MASTER.

The indorsement of change of master of an enrolled vessel should be made on enrollment only.

TREASURY DEPARTMENT, August 25, 1900.

Sir: The Department has received your letter of the 17th instant, requesting instructions as to whether indorsements of the change of masters should appear on the licenses of enrolled vessels, as well as on the enrollments.

In reply I have to state that in a letter of the Department, dated April 10, 1890, and quoted in T. D. 10621, it was held that an indorsement upon the certificate of enrollment only should be made. In the case of a licensed vessel not enrolled, the indorsement should be made upon the license.

Respectfully, O. L. SPAULDING, Assist. Sec.
CAPT. O. C. HAMLET, R. C. S., Tompkinsville, N. Y.

REPORTED BY THE LOOKOUT.

FOR facilitating the welding of two pieces of iron or steel M. A. Charbonnier, of Paris, prepares plates made from a composition of borax and iron filings, strengthened by a web of iron-wire mesh. The plates are also indented by lines crossing one another at right angles, so as to permit of a piece being broken off readily to suit the surface to be welded. It is found by experience that with these plates the weld is far sounder than can be obtained without them, and also that the metal can be welded at a far lower temperature, which is of great importance in the case of steel.

A METHODIST preacher whose name is Dennis delivered an admirable discourse recently on the vice of swearing. Accuracy compels us, however, to take issue with the reverend gentleman upon his characterization of "damn." Strictly speaking, "damn" is not a cuss word" at all, though, we admit, it must have sounded a bit vicious when snapped out the other day by an angry Texas girl at her truant lover. "Damn" is from the Latin *damnare*, meaning to condemn; and when the prosecuting Caesars condemned any one to be devoured by the wild beasts, he was "damnatus ad bestias." The Roman martyrology accordingly teems with this phrase; and it is quite correct to "damn" a person or thing that deserves condemnation.—Ex.

THE Canadian steamer Monarch was struck by lightning on Lake Superior as she was running up the north shore on her way to Duluth Sunday. A thunderstorm was in progress when a bolt struck the steel foremast, breaking the top off. The piece dropped downward, crashing through the roof of the deckhouse and embedding itself in the planks of the deck. The piece of steel entered the state room of Capt. E. Robertson of the Monarch and struck the floor about six feet from the opposite center of the bed. After the storm Capt. Robertson showed some ladies and gentlemen the stateroom where the piece of metal had shot downward from aloft. One of the ladies of a pious turn of mind, said: "How fortunate, captain, that you were not at prayer when that awful thing came down."

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T. H. NEWMAN, Manager Cleveland & Buffalo Transit Co., Cleveland, Ohio.
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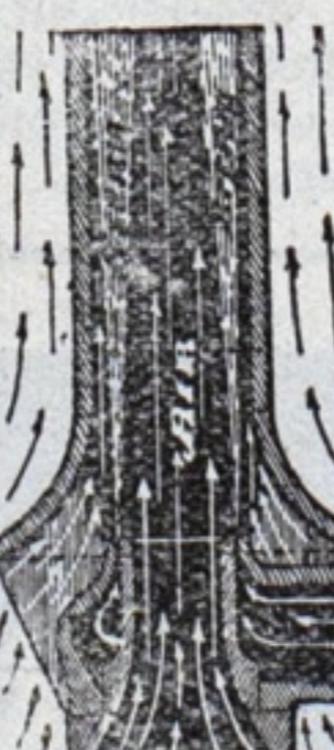
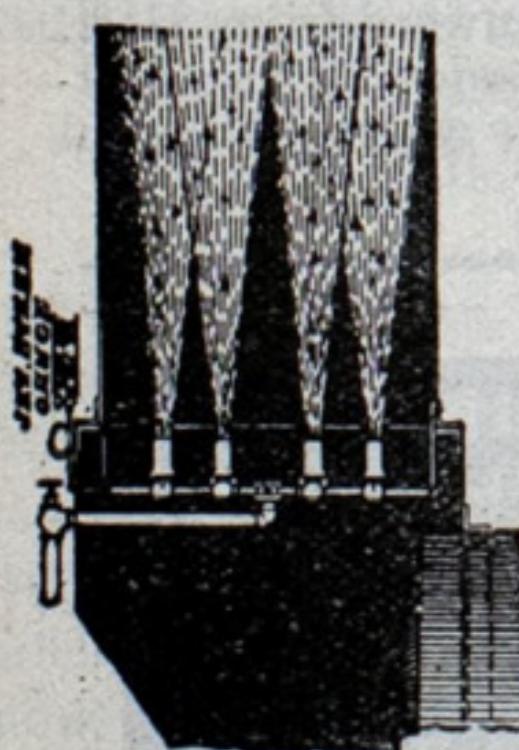
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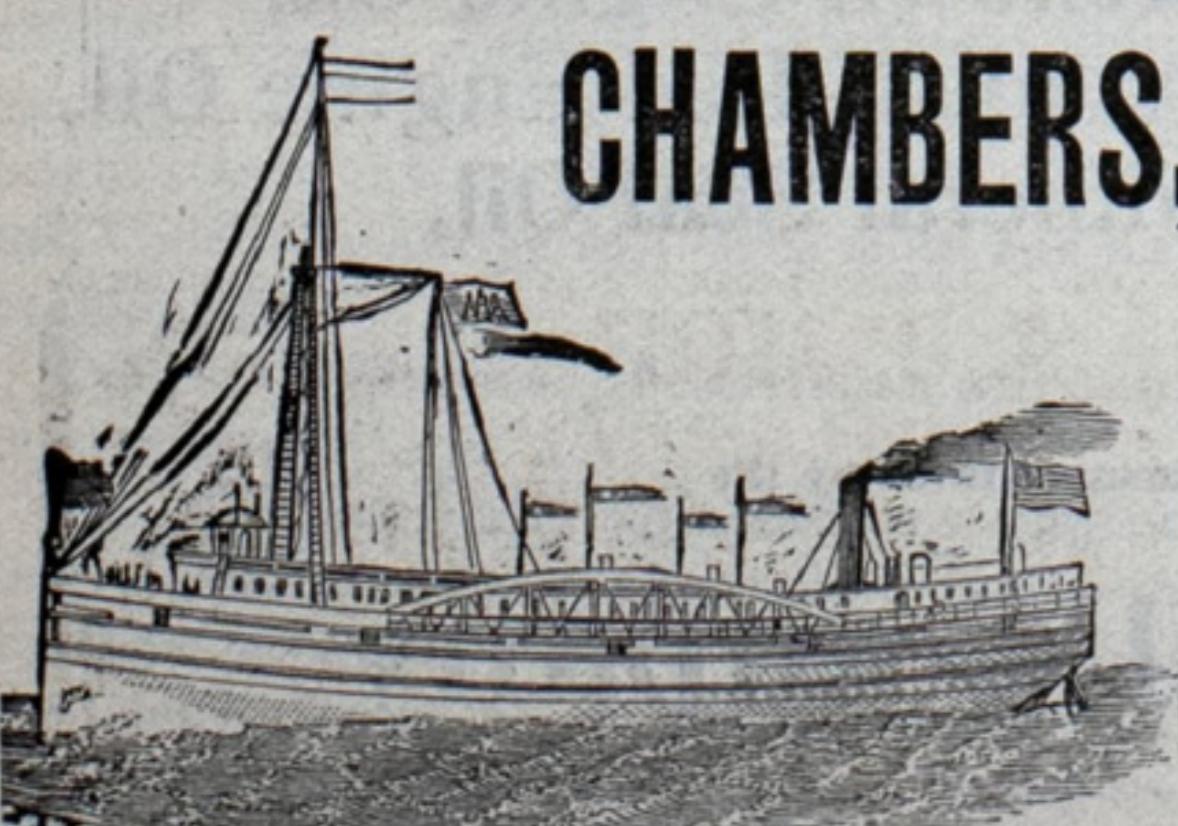
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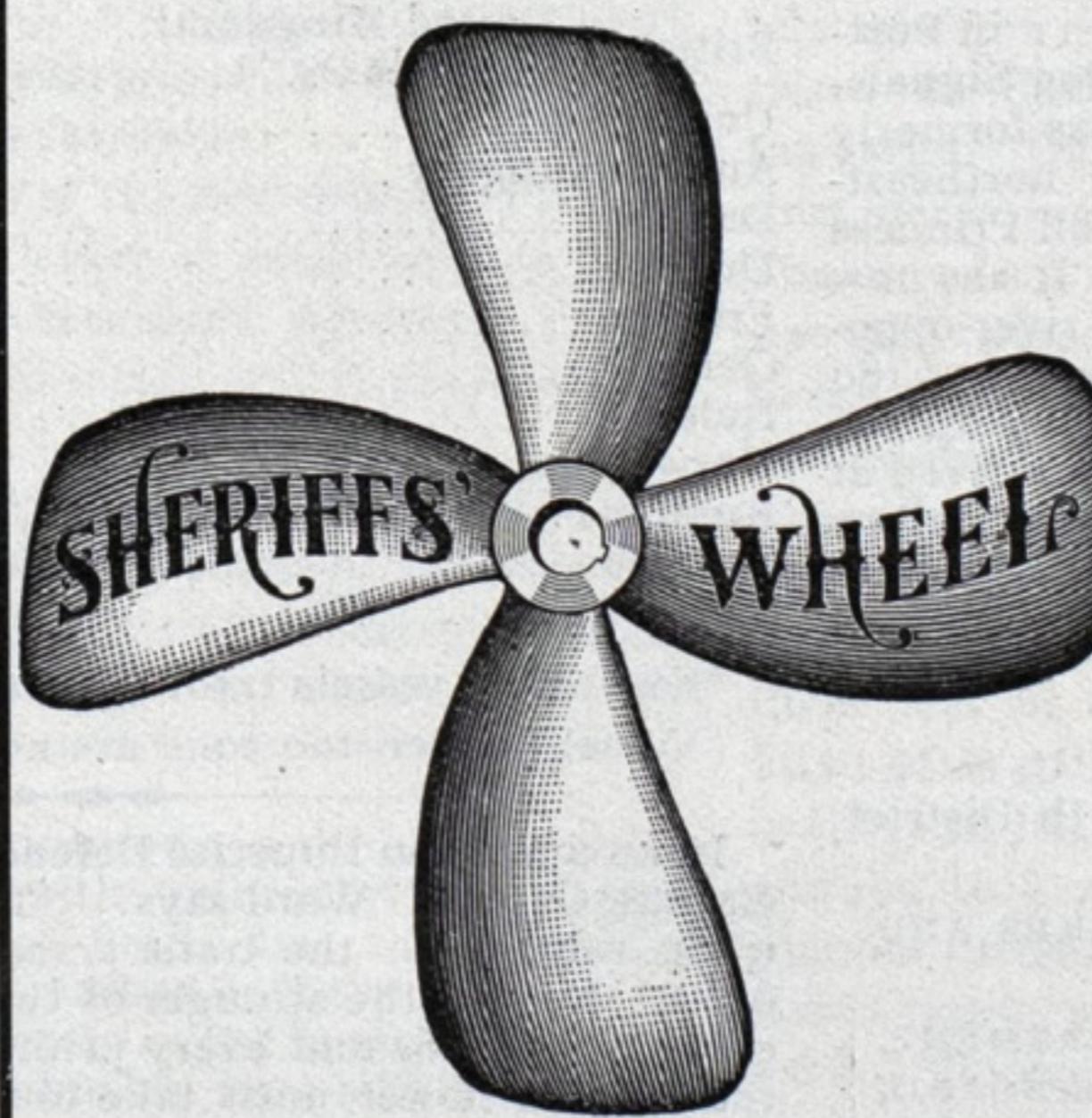
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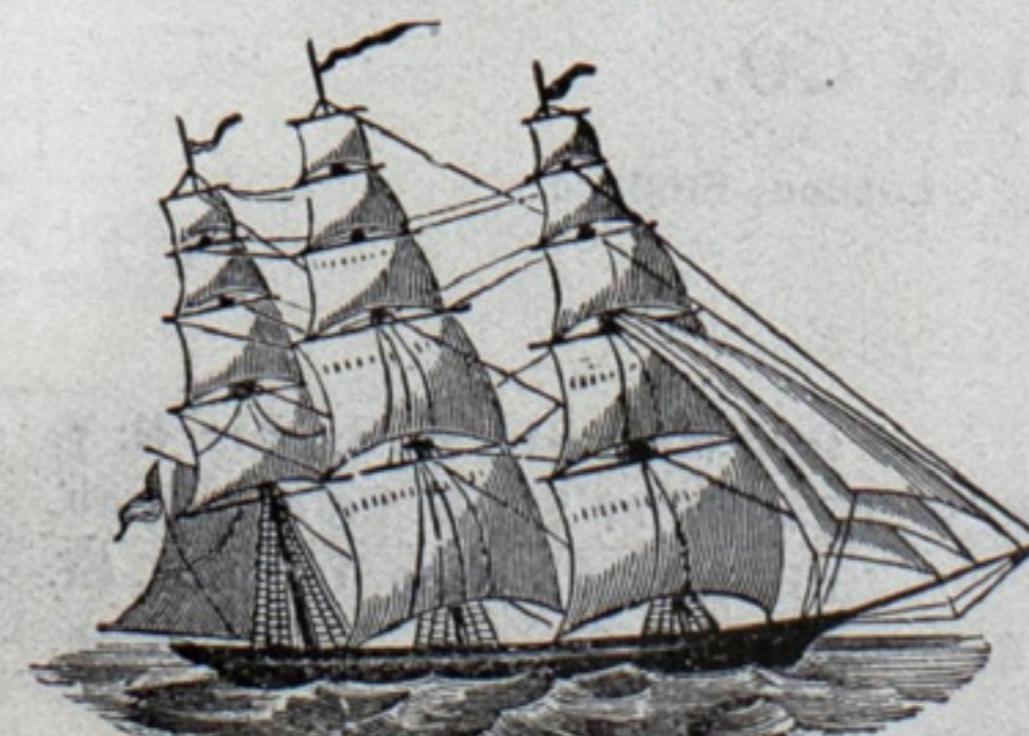
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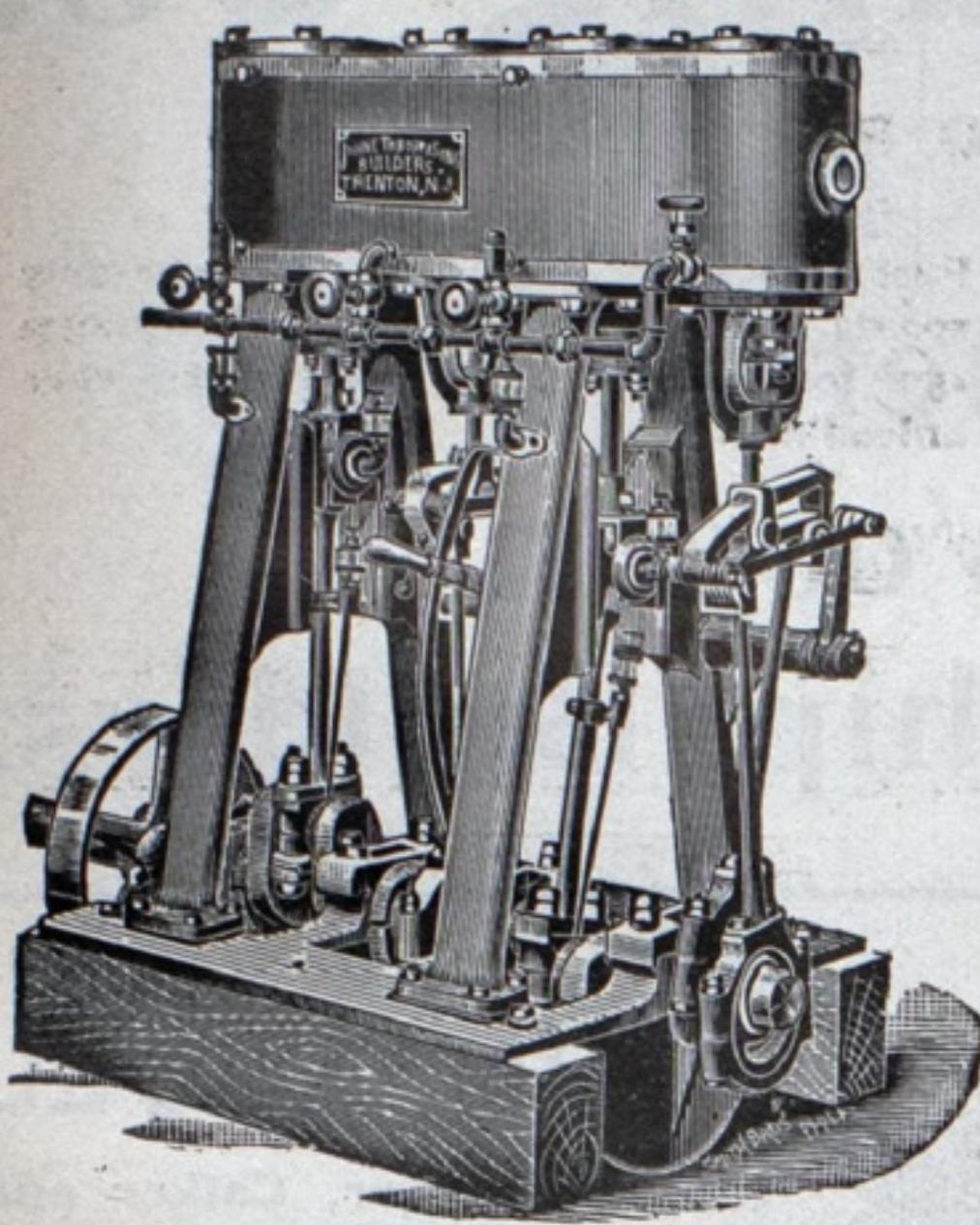
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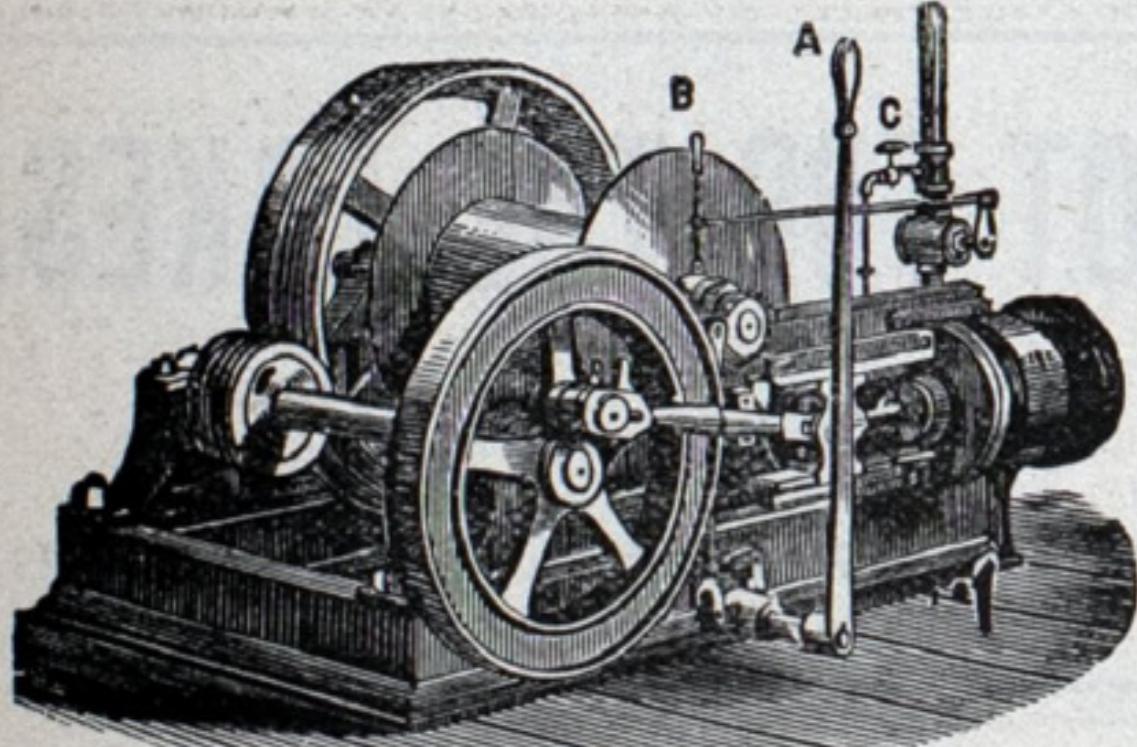
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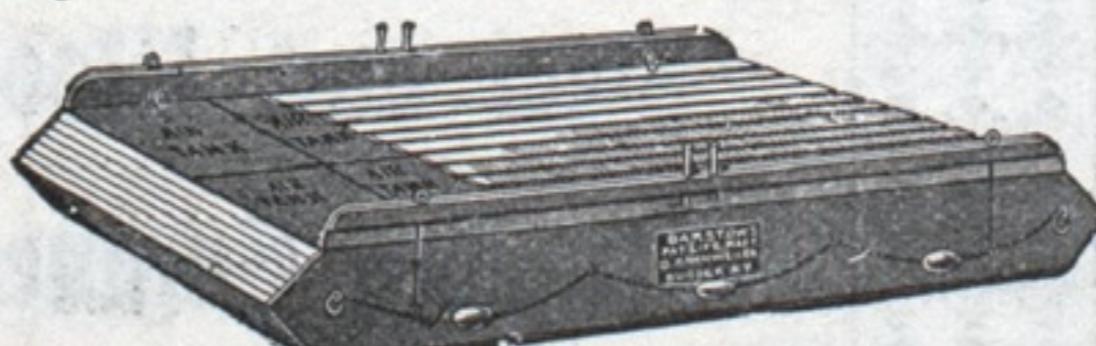
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Mitchell Transportation Co.'s steamer Hendrick S. Holden.

Minnesota Iron Co.'s steamer Presque Isle. American Steel Barge Co.'s steamer Alex. McDougall.

Lake Michigan & Lake Superior Transportation Co.'s steamer Manitou.

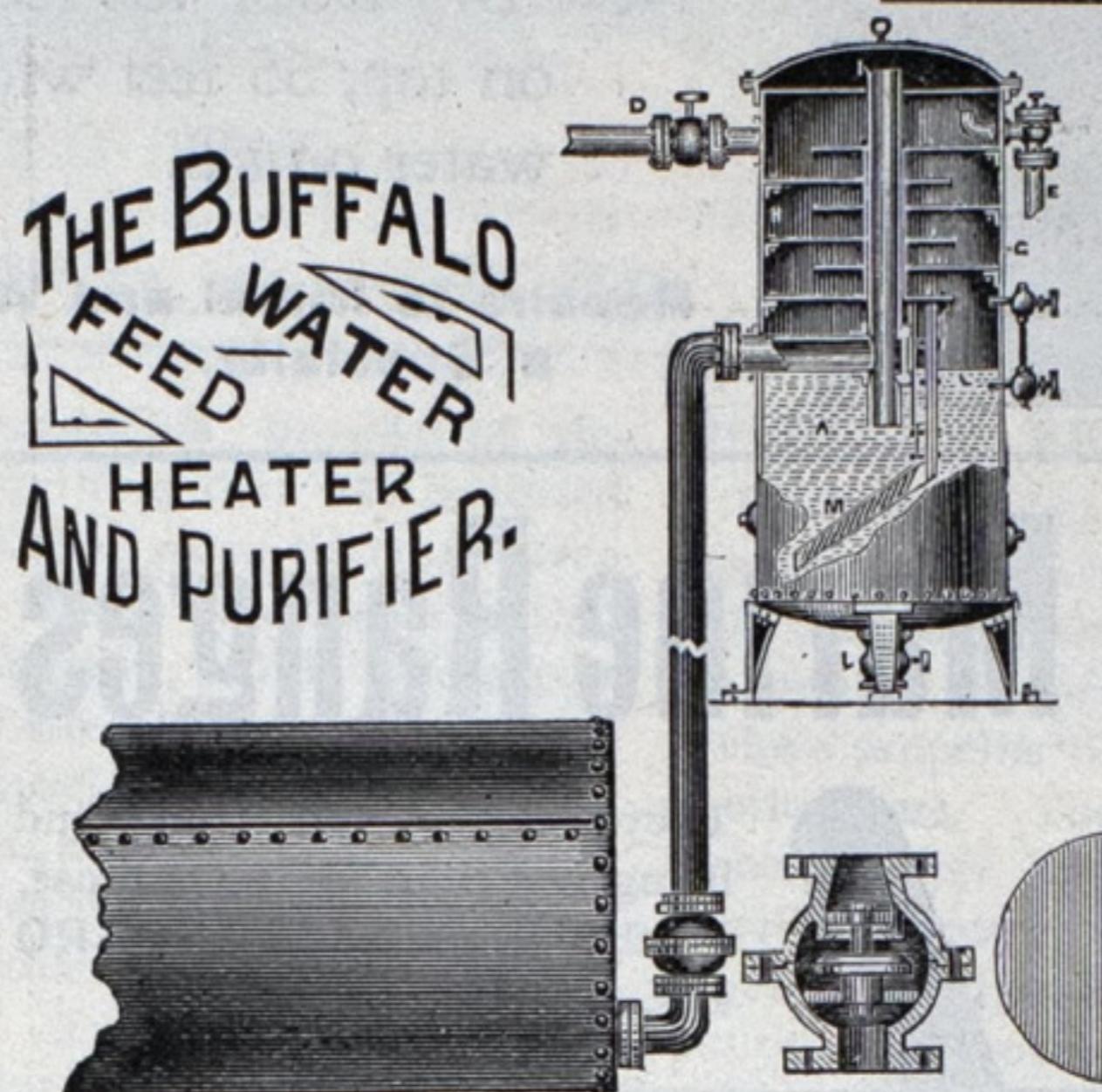
Bessemer Steamship Co.'s steamers S. F. B. Morse and Douglas Houghton.

American Transportation Co.'s steamers John Harper and Alex. Nimick.

Red Star Line's steamers Robert Mills and Wyoming.

Wilson Transit Line's steamers W. D. Rees and Andrew Carnegie.

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Government Proposals.

U. S. ENGINEER OFFICE, Bellevue, Pa.,
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Launch, about 65 feet length, with floating
boathouse, immediate delivery, will be re-
ceived here until 2 p. m., September 20, 1900,
and then publicly opened. Information fur-
nished on application. Wm. H. BIXBY,
Maj., Engrs.

35-36

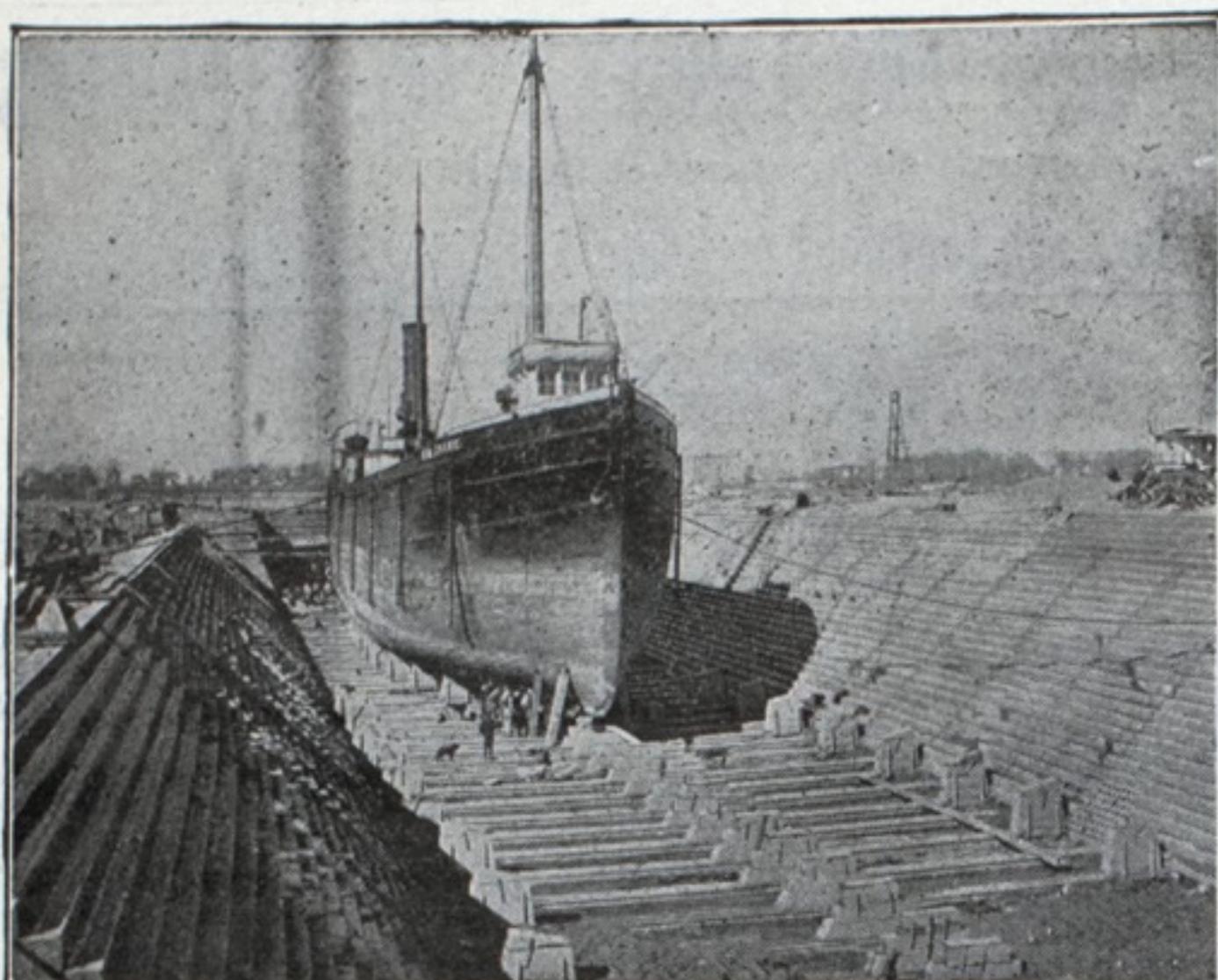
U. S. ENGINEER OFFICE, Pittsburg, Pa.,
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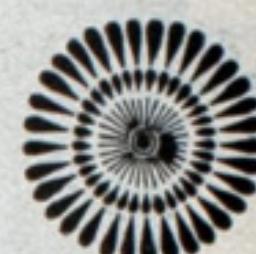
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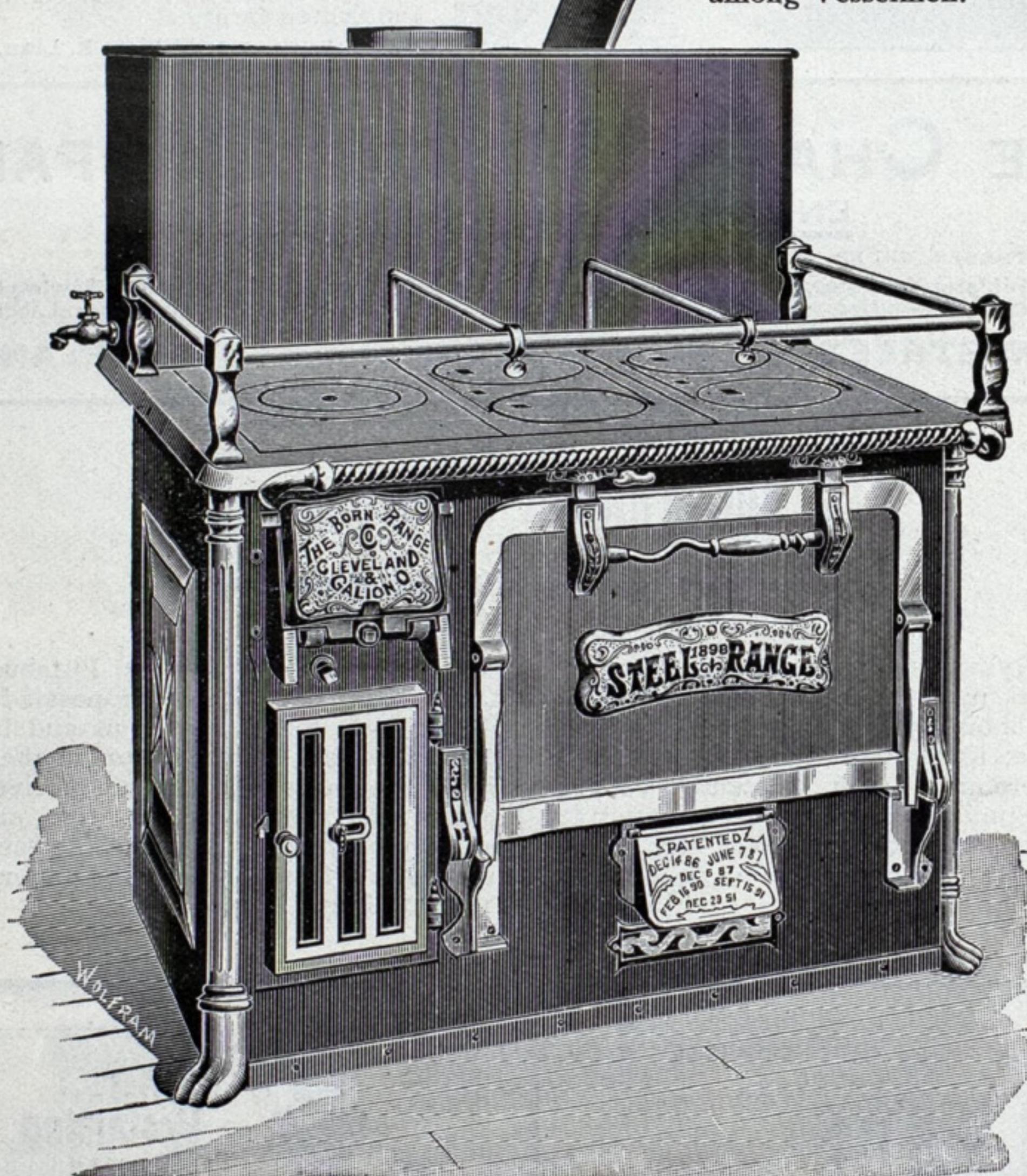
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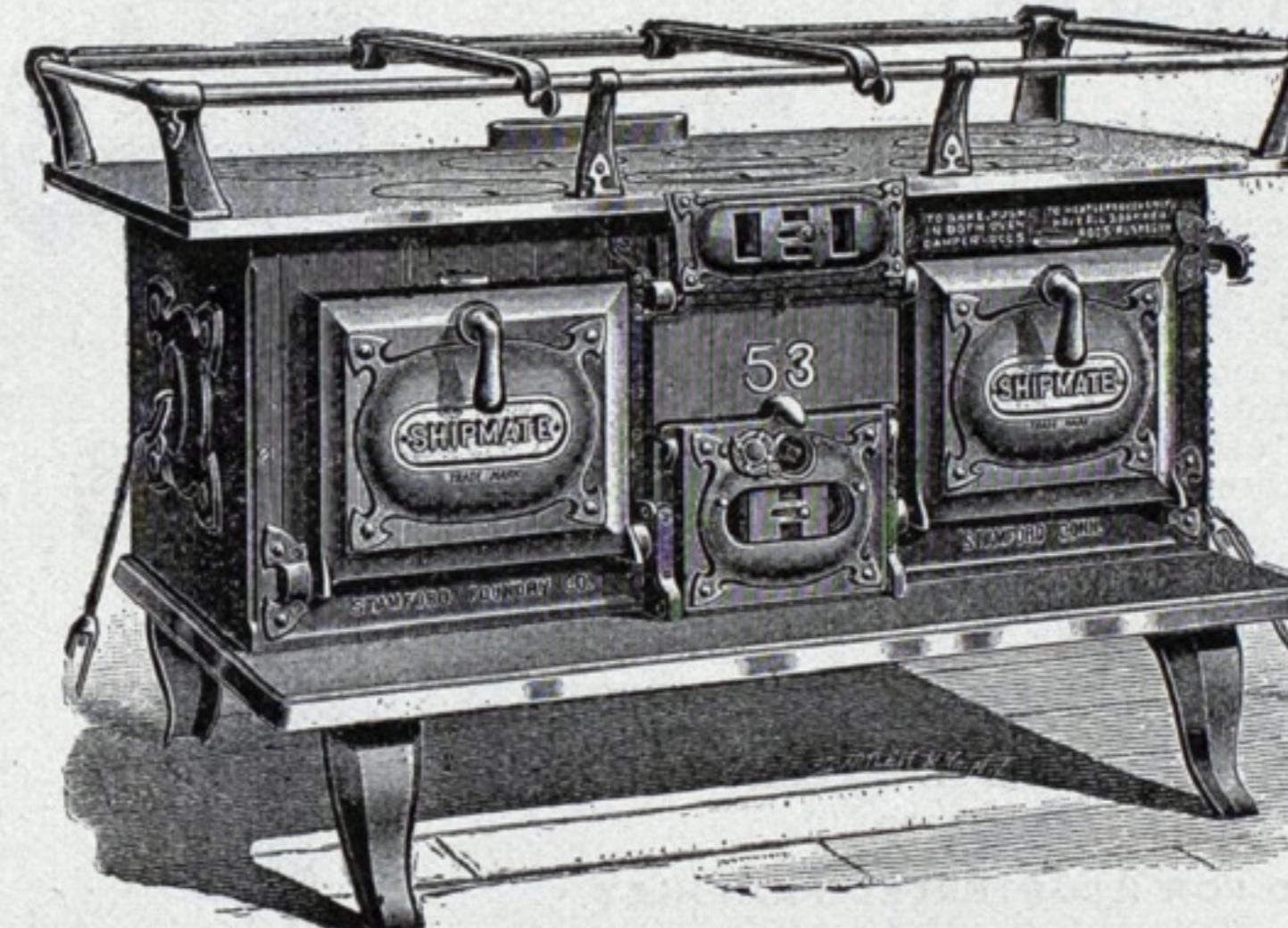
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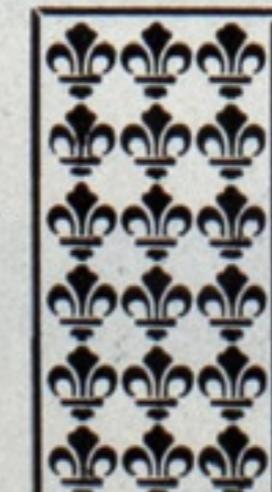
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